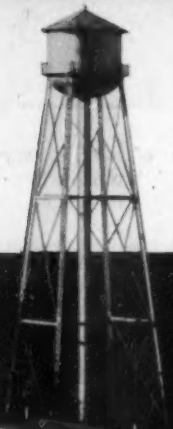
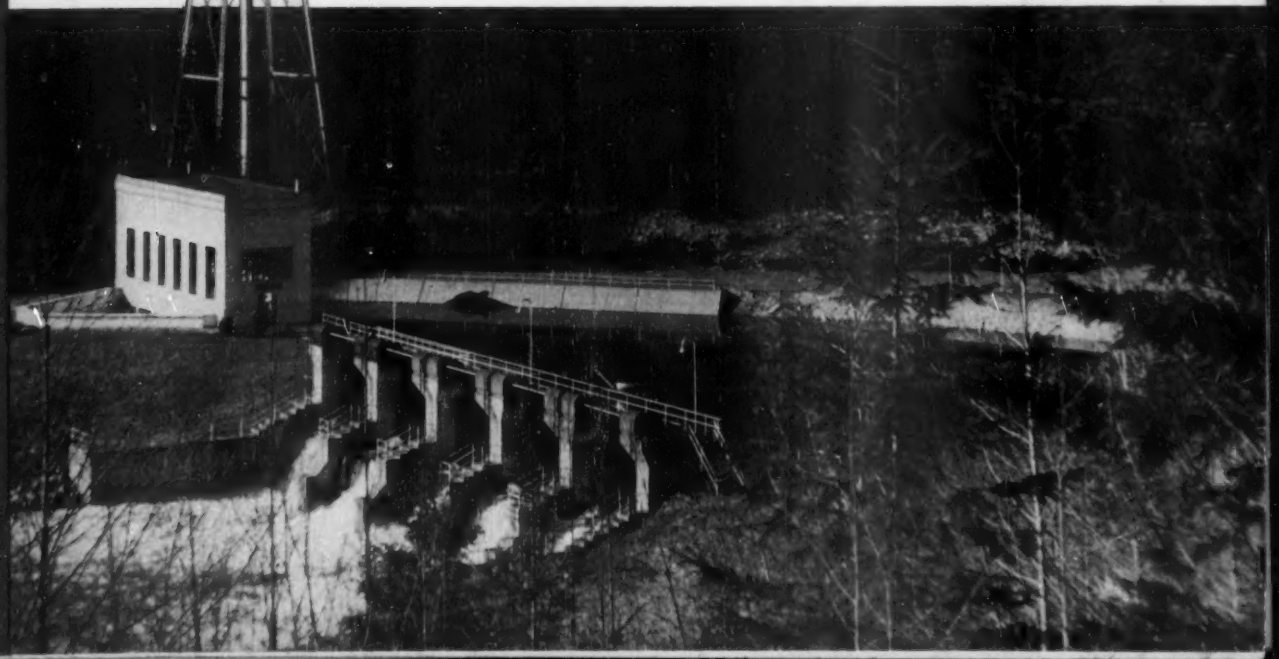
The American City

MAY 1954



Seattle, Washington, host, May 23-28, to the annual meeting of the American Water Works Association, prospers as a great port city with the important asset of its skillfully engineered mountain water supply. The intake is shown below.

See the story on pages 103 and 104.



Where a runway needs extra rugged paving . . .

Laying a resilient, heavy-duty Texaco Asphaltic Concrete wearing surface on one of the principal runways of Philadelphia's International Airport. The contractor was the Union Paving Company of Philadelphia.

Philadelphia's International Airport is one of the country's key air terminals. Its main runways, including Runway 422 shown here, are called upon to serve a constant flow of incoming and outgoing commercial airliners, including the heaviest planes now in service.

The type of wearing surface shown under construction on Runway 422 is a hot-mix Texaco Asphaltic Concrete. This is the same resilient, heavy-duty type of pavement now serving 81,000-vehicle-a-day traffic on the Delaware River Bridge at Philadelphia.

Hot-mix Texaco Asphaltic Concrete is an ideal pavement for all airport surfaces, including runways, taxiways and hangar aprons. Constructed on an asphalt penetration macadam or waterbound macadam base, it can be designed to meet exactly the requirements of any municipal airport. Because of its moderate first cost and low maintenance cost, this type of construction offers your community the most economical solution to your airport paving problem.

Helpful information on all types of Asphalt construction for airports, as well as for city streets, is presented in two booklets, which our nearest office will be glad to send you.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Minneapolis 3 Philadelphia 2 Richmond 19

TEXACO

REG. T. M.

TEXACO ASPHALT

MAY 1954

The American City

Administration and Government

Our Municipal Notebook **5**
Connecticut Cities Adopt Unemployment Compensation **9**
A Municipal Program for "Sick Time" **11**
New System Pays for Billing Machine **130**
Reading List Helps Alhambra Employees **131**
The City Tells Its Story **140**
Taxes Take a Decreased Per Cent of Income **141**
For Effective Federal-State-Local Relationships **143**
Why Calculators Are in Demand **144**
To Help Maintain High Employment **158**
Recent City Manager Appointments **201**
Enforcement Officials in TV Program **221**

Street Construction and Maintenance And Street Cleaning

Secondary Streets Get Primary Attention **19**
Vacuum-Leaf Machine Gets New Duties **19**
The System Works Best at Night **105**
A Small Town Labor Saver **108**
Sawed Contraction Joints **125**
Three-Way-Stretch for Street Budgets **142**

Lighting

Lights Bring Columbia, S. C., to Life **169**
Giving More Thought to Street Lighting **169**
Mercury Vapor on Sellwood Bridge, Ore. **171**
On Evaluating Night Highway Accidents **171**
Garden Lighting, A Fashion in Atlanta **173**
Maryland Will Light State Road Intersections **173**
Photoelectric Control for Outdoor Lighting **173**
Wonderland of Modern Street Lighting **173**

Sewerage and Sewage Treatment

A Breakdown of Sewer-Service Charges **23**
Drinking Water from Sewage **23**
New Homes — New Trunkline Sewers **23**
New Haven Builds a Third Plant in 20 Years **118**
Mechanical Sewage Flow Measurement **120**
Milwaukee Graduate Training Program **122**
Park Ridge, Ill., Cleans Sewers by Contract **132**
Another Industrial Assist **145**

Shopping Centers

Shopping Centers a Threat to Downtown **11**
Regional Shopping Centers **126**
A Crisis in Old Shopping Districts **159**
Planning Advice to Shopping Center Developers **185**

Airports and Aviation

Field Service Car **17**
Half-Tire Markers **17**
Universal Tow Bar **17**

Power

Cheaper Kilowatts for Poplar Bluff **128**

Public Safety

Civil Defense in Suburban St. Louis **29**
Communications Truck with Standby Power Trailer **129**
Getting a Fire Department Equipped for Fighting **133**
Relocating Peoria's Fire Stations **138**
Combined Fire Station-Township Hall **139**

Water Supply and Treatment

Water — Our Cities' Most Vital Asset **5**
Water Works Puzzles in Five Maryland Cities **25**
Seattle's Mountain Water Supply **103**
Right Tank — Wrong Place **104**
Modern Water Rates, Part I **106**
Two Underwater Pipelines **109**
Subsoil Stabilization Saves Reservoir **122**
Cast Iron Pipe Century Club **124**
Make Water Works Structures Neighborly **135**
Dorr Company Engineering Fellowships **137**
Picture Booklet on Water Supply **137**

Traffic Control

Indignant Rancher and a Parking-Meter Fine **13**
Off-Street Parking and Loading Requirements **116**
Seven League Strides Toward Orderly Traffic **121**
Pittsburgh's Traffic Regulations Successful **177**
Red Police Fords in Dearborn, Mich. **181**
Wants Motorists to Use Public Transportation **181**
Installing Street Signs in Milwaukee **181**
Program for Urban Traffic Improvement **183**
Women Are Tougher as Traffic Police **183**

Purchasing

Outside Agency OK's Houston's New System **134**
Purchasing News **227**

Planning, Zoning, and Housing

Planners and Housers Endorse Proposed Housing Act **7**
Oak Park Shows Progress on Civic Center **9**
"Fight-Blight" Plans for Old City Areas **15**
APCA Celebrates Golden Anniversary **131**
Beware the False Prophets **146**
Effective Regional Planning **154**
Instruments Essential to Modern City Planning **155**
Zoning and Planning Notes **191**
Assistantships in City Planning at U. of N. C. **221**

Refuse Collection and Disposal

How to Build a Sanitary Fill in Swamplands — Sanitary Fill Series, Part VIII **112**
Kitchen Garbage Grinders Mean a Cleaner City **150**

Parks and Recreation

Pack More Fun Into Playgrounds **27**
San Diego Needs Mission Bay Park Director **153**
Principles of Community Recreation Leadership **156**

Miscellaneous

Our Municipal Notebook **5**
Restrictions on Classifying Property for Taxation **5**
Films for the Municipal Engineer **114**
Town Meetings Come to Philadelphia **129**
Tree Stump Removal **152**
New LeTourneau Semisphere Building **185**
"How to Be a Hero in Your Own Home Town" **201**

Departments

Manufacturers' Catalogs **31**
Legal Notes and Decisions **199**
Bond Market **201**
Conventions — When and Where **203**
Municipal and Civic Publications **205**
Purchasing News **227**
About People You Know **281**
Index to Advertisers **292, 293**

Good News for Telephone Users

FEDERAL EXCISE TAX ON LONG DISTANCE	FEDERAL EXCISE TAX ON LOCAL SERVICE
REDUCED FROM 25% TO 10%	REDUCED FROM 15% TO 10%

THE reductions in federal excise taxes, voted recently by Congress, mean substantial savings for telephone users. Your telephone bill is lowered by the entire difference between the old and the new taxes.

Instead of paying 25% on Long Distance calls, you now pay 10%. On Local telephone service, the tax is now 10% instead of 15%.

The entire amount of the saving in taxes comes off the bills of our customers. None of it is retained by the telephone companies.

The reductions went into effect on April 1 and apply to service billed to you on or after that date.

Now it costs you even less to keep in touch by telephone.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Water—Our Cities' Most Vital Asset

WATER—pure and abundant water—has many counts to its credit, including the fact that this issue of THE AMERICAN CITY is the largest in this magazine's 44 years of publication.

In recognition of the important annual conference that the American Water Works Association is to hold, jointly with its Northwest Section, in Seattle, Wash., May 23-28, THE AMERICAN CITY is devoting even more space than usual, in the reading pages of this May issue, to various phases of municipal water supply and treatment problems. Included among these articles and items are:

Seattle's Mountain Water Supply—a description of the host city's watershed and system

Subsoil Stabilization—aids an ailing reservoir

Make Water Structures Neighborly—a Dale Carnegie course in water-plant building

Two Underwater Pipelines—Tacoma, Wash., solves a tough water-supply problem

Modern Water Rates—the first of a series shows what's happening to water-revenue producers today

Right Tank—Wrong Place—a Florida city moves its elevated tank

Water Works Puzzles in Five Maryland Cities—a state-wide review of interesting water developments.

Plus a listing of municipal engineering training films, which devotes a substantial portion to water supply; as well as other brief notes on water-supply developments.

It will be seen, also, that many of the manufacturers serving this vital field of public service are using additional space to bring their message through THE AMERICAN CITY to mayors, city managers, city engineers, water-works superintendents, and others concerned with our cities' most vital asset.

A chief attraction of the Celestial City, as described in the Book of Revelations (Chapter XXII.1), is "A pure river of water of life, clear as crystal." Here is an ideal which, thanks to modern engineering and sanitary science, is substantially attainable here and now.

Restrictions on Classifying Property For Taxation

"UNIFORMITY Clauses in State Constitution," is the title of an analysis and map in the March 1954 *Assessors News Letter*, published by the National Association of Assessing Officers.

The statement points out that constitutional restrictions upon property tax legislation vary greatly from state to state, and that one of the most important of these restrictions relates to the classification of property for taxation at different rates.

As analyzed in the *News Letter*, the states are divided into six groups, as follows:

Uniformity Required for All Property

Arkansas	New Hampshire
Illinois	Tennessee
Indiana	Texas
Massachusetts	Wisconsin
Mississippi	Wyoming
Nevada	

Uniformity Required for All Tangible Property

Florida	Nebraska
Georgia	South Carolina
Kansas	Utah
Maine	

Uniformity Required for All Real Property

California	Ohio
Missouri	Washington

Uniformity Required for All Land

Maryland

Any Reasonable Classification Permitted

Alabama	New Jersey
Arizona	New Mexico
Colorado	New York
Connecticut	North Carolina
Delaware	North Dakota
Idaho	Oklahoma
Iowa	Oregon
Kentucky	Pennsylvania
Louisiana	Rhode Island
Michigan	South Dakota
Minnesota	Vermont
Montana	Virginia

Classification Prescribed by Constitution

West Virginia

THE AMERICAN CITY

Harold S. Buttenheim, Editor • **Alden W. Welch**, Research Editor • **William S. Foster**, Engineering Editor
Carl Eric Carlson, Associate Editor • **William T. Dulac**, Associate Editor

Editorial and Executive Offices:
470 Fourth Avenue, New York 16, New York • MUrray Hill 5-9252

Edgar J. Buttenheim, President • **George S. Conover**, Vice-President
Edwin Wagner, Treasurer • **Edgar M. Buttenheim**, General Manager
Myron MacLeod, Advertising Manager • **Edward George Allen, Jr.**, Promotion Manager
Curtis R. Buttenheim, Southern Sales Manager • **Edna A. Jones**, Production Manager

Branch Offices:
Chicago 6 • 1719 Daily News Building • Central 6-2853
George S. Conover, Vice-President • **Warner H. Robinson** • **Arthur B. Burgan**
Cleveland 14 • 420 Leader Building • Robert C. Burton
Los Angeles 27 • 2238 Ben Lomond Drive • Albert T. Miller, Pacific Coast Manager

VOLUME 69, NUMBER 5

THE AMERICAN CITY is issued monthly by THE AMERICAN CITY MAGAZINE CORPORATION Subscription $4 per annum in any part of the world. Single copies, 50 cents. Back copies, $1. Entered as second-class matter, July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A. THE AMERICAN CITY is indexed regularly by Engineering Index, Inc., and the Readers Guide to Periodical Literature.

Dump today–diamond tomorrow

In the sanitary landfill method of refuse disposal, refuse is first spread as shown at this Lynchburg, Va., project.

Refuse is compacted, then covered with a two-foot layer of soil or other material.

Many communities have found the answer to their refuse disposal problem with sanitary landfills like this one. Using the rugged Cat* HT4 Shovel you see above, the city of Lynchburg, Virginia, is disposing of its refuse by using it as fill in the development of a four-acre athletic field for a local high school.

At the time these pictures were taken, 100 truckloads a day were being dumped here. The HT4 spreads and compacts the refuse, then covers it with a layer of earth.

What does the Public Service Department think of the HT4? John D. Roberson, Assistant Director, says, "We find this machine very economical to operate. It does a good job at low cost."

The Caterpillar HT4 Shovel is built to stay on the job longer and at lower cost than any competitive unit. Its big 80-inch bucket takes 1¼-yard bites. Girder-type frame is cross-braced for added strength at the hinge point. Box-section, all-welded lift arms are cross-braced to eliminate twisting. And it uses low-cost No. 2 furnace oil without fouling.

Your Caterpillar Dealer is ready to give you further facts on sanitary landfill and help you select the right unit for your job. He's as near as your telephone. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

United Community Defense Services Stimulates Community Improvements

A NOTABLE EXAMPLE of aid rendered by the United Community Defense Services is Warner Robins, Ga., a village of 50 people which "grew overnight" in connection with a large U. S. Army Air Force base, and is now a well-established, well-serviced city of some 17,000 people.

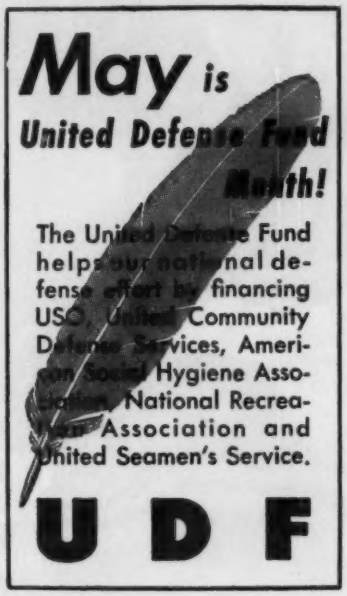
Steps were taken during World War II to incorporate the village, although the air base originally provided fire protection, water and sewerage, and police protection, and much of the population was transient. After the war the population dwindled, but with the Korean conflict, the base began renewed activities. The mayor and council took vigorous action to provide for a plan, install permanent municipal facilities and improvements, and help in community organization for health, recreation, and welfare services. A planning and zoning consultant was engaged, and the state and federal governments were asked for help.

A request was sent to the United Community Defense Services, whose regional representatives had already advised community leaders on how they might find solutions to some of their problems. The UCDS had been formed as a federation of national agencies during the Korean situation to assist local communities affected by the defense effort. It is financed by contributions through local Community Chest and United Fund campaigns all over the country. The UCDS answered the request by sending two social workers to Warner Robins who were skilled in community program work.

Citizen activity began to flourish initially on a successful summer playground program, and a Red Feather Community Chest drive. Then a voluntary Recreation Association helped the city create a Department of Recreation, with the aid of tax funds and Community Chest collections. Steps were taken, too, to provide help for dependent families.

To encourage industrial growth and diversification, the Council sought provision of economical power. A bond-issue referendum was approved by the voters, and the city became the owner of a gas system which will eventually supplement the city's income.

Streets are now paved and lighted and a modern water and sewerage system costing $1,500,000 is under construction. School-building facilities are modern and adequate. The city administration has been expanded, and a systematic tax-collection system is being evolved.


May is
United Defense Fund
Month!
The United Defense Fund helps our national defense effort by financing USO, United Community Defense Services, American Social Hygiene Association, National Recreation Association and United Seamen's Service.
U D F

Planners and Housers Endorse Proposed Housing Act

BOTH the American Institute of Planners and the National Association of Housing Officials have endorsed and supported the general principles of the proposed Housing Act of 1954, with some minor recommendations for change presented before the Congressional hearings in March.

At the meeting of the A.I.P. in Dayton, Ohio, in March, the Institute proposed, however, that local powers be strengthened in dealing with long-term credit for existing old and obsolete buildings. Such credit, it was stated, should be extended only for properties located in areas designated by local public agencies and in full conformance with the general plan for the locality. The Institute also urged that *counties* be included as eligible for proposed federal matching grants to state planning bodies for planning assistance to communities under 25,000. It asked, in addition, that the definition of urban renewal projects be broadened to include within these programs open land needed for sound community development and growth.

At the Dayton meeting, Tracy B. Augur was awarded the Distinguished Service Citation of the Institute, the fourth person to be so honored. Mr. Augur, who has increasingly devoted himself to problems of urban vulnerability and decentralization served as Principal Planner for the TVA from 1933 to 1948.

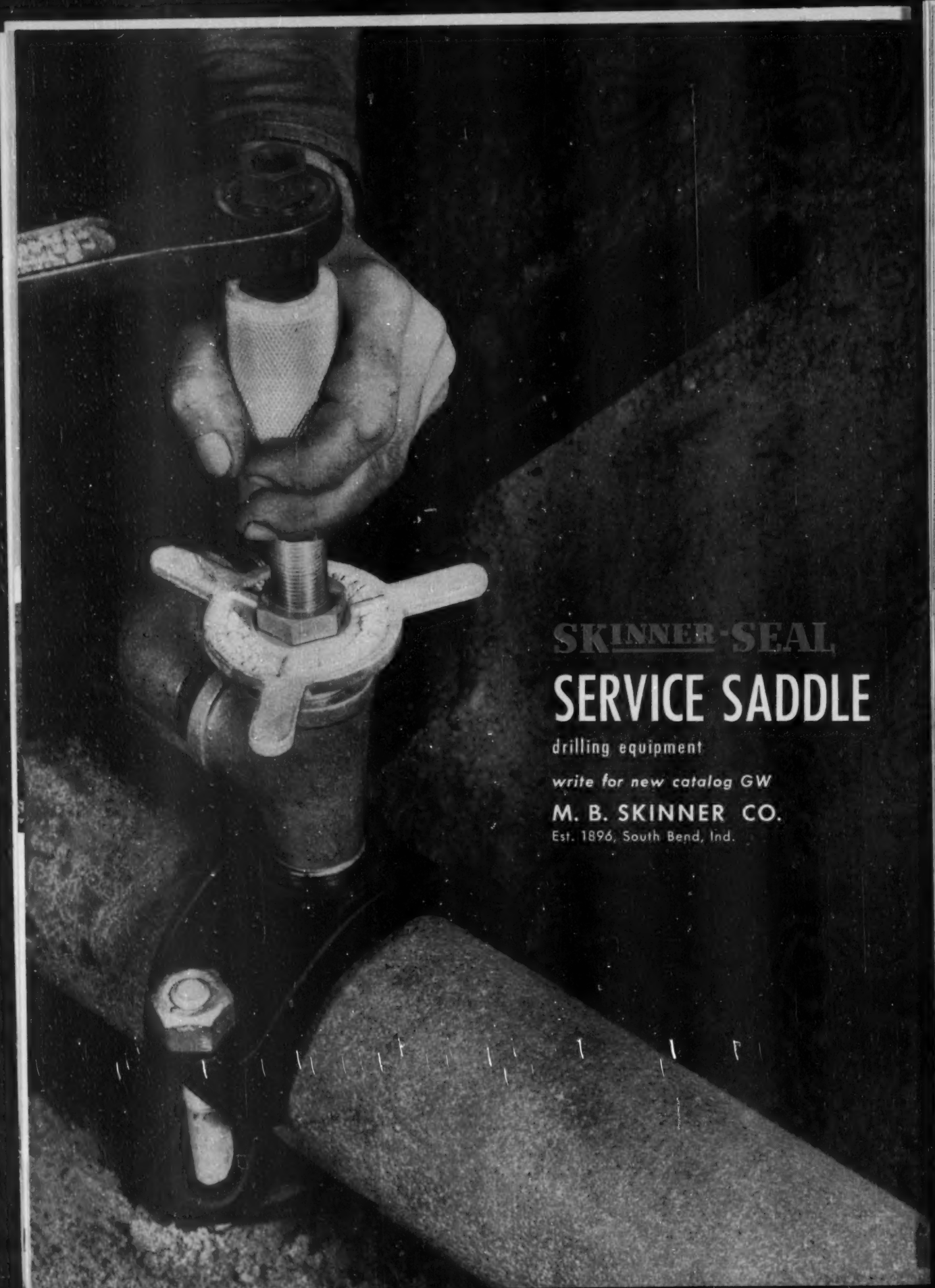
New officers and board members of the Institute, which now numbers 1,143 members, are as follows: John T. Howard, President; C. McKim Norton, Vice-President; and F. Stuart Chapin, Jr., Secretary-Treasurer; and Harry Bergh, Howard Menhinick, and Evert Kincaid, three-year-term Board members.

Answers to Questions On Carson Pirie Scott Centennial Competition

A SET OF QUESTIONS and answers in the $32,500 Carson Pirie Scott & Co. Centennial Competition in City Planning for the central area of Chicago has been released by Howard L. Cheney, F.A.I.A., professional adviser. The questions and answers include information on present and proposed developments in Chicago which may affect the practicality of the solutions advanced. They may be obtained, together with programs for the Competition, which closes on July 31, from the Centennial Office, Carson Pirie Scott & Co., 1 South State Street, Chicago 3, Ill.

Fifth Inter-American Municipal Congress

A THREE-PART AGENDA has been announced for the Fifth Inter-American Congress of Municipalities to be held in San Juan, P. R., beginning December 2, 1954. Subjects to be discussed are: Human Relations in Municipal Government, Good Municipal Administration as an Incentive toward Greater Autonomy, and Municipal Redevelopment. Further information about the meeting may be obtained from the office of Felisa Rincon de Gautier, City Manager of San Juan, P. R.


SKINNER-SEAL
SERVICE SADDLE
drilling equipment
write for new catalog GW
M. B. SKINNER CO.
Est. 1896, South Bend, Ind.

Upward Trends in City Managers' Salaries

A STUDY by the International City Managers' Association shows a substantial increase in the average salaries of city managers between January 1, 1951, and January 1, 1954. This increase is especially noticeable in the smaller cities.

Of the cities reporting, the group having a population of between 250,000 and 500,000 showed an increase of 12.5%, the average present salary being $18,412. Cities of 100,000 to 250,000 were up 9.4%, the average salary being $17,521. Those between 50,000 and 100,000 were up 13.4%, with an average of $13,125.

In cities of from 25,000 to 50,000 the increase was 16.7%, average salary $10,856; between those of 10,000 and 25,000 the increase was 21.5%, average salary $8,851. Salaries in cities between 5,000 and 10,000 were up 16.1%, and averaged $6,749; those under 5,000 population were up 25.6%, with the average salary $5,596.

Connecticut Cities Adopt Unemployment Compensation

UNEMPLOYMENT compensation plans for city employees, under the terms of state legislation enacted in 1953, have been adopted by Groton and New Hartford. Under the act, local governments may elect to cover a portion or all of the employees. Payments to the unemployment compensation fund are based upon a different system than that for private employers.

At the end of each calendar quarter the state administrator of unemployment compensation notifies each participating local government of the amount paid in benefits to its employees during the quarter, and the government reimburses the fund, with the payments coming entirely from the public treasury.

Local governments may also, by vote of the legislative body, increase or decrease the types of employees covered or may withdraw entirely from the program.

Oak Park Shows Progress on Civic Center

OAK PARK, MICH., has just completed another phase of its dynamic master plan, with substantial progress on its well-coordinated Civic Center, reports City Manager Harold K. Schone.

Key building in the development is the $175,000 City Office Building, dedicated early in 1953, but the rapidly expanding needs of the city soon made it evident that additional office space would be required before 1954. Consequently, rapid authorization by the City Council and planning ensued, and construction of a new, low, modern-looking structure resulted.

Occupied on December 28, 1953, the Public Service Building, as it is known, is 112 feet by 38 feet and cost $81,000. It houses the staff and personnel of the following city departments: Water; Building Inspection; Engineering; Forestry; Parks and Recreation, and the office staff of the Department of Public Works.

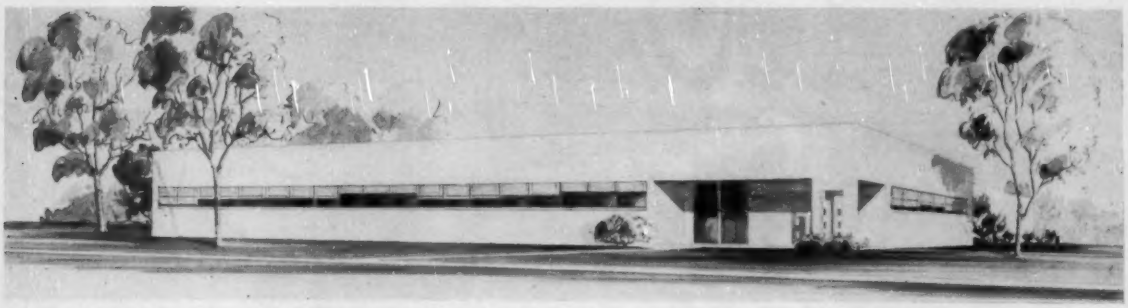
The newly completed building has an unusual, up-to-date heating and air-conditioning unit, and uses what is known as a split system. Hot-air ducts compensate for heat losses in the ceilings and floors, while hot-water radiation offsets heat losses in exterior walls. The system uses dual thermostats—one located outside the building, and one inside. Air heated by coils in the radiation system is used in the air ducts, providing a dual use of the hot water system.

The air-conditioning system uses the same duct work as the hot air and is divided into three separate zones. The condenser, a 15-ton Schnocke, Model A.F.C. 15 with a Marlo CMZ-13.3 multizoned air-conditioning unit provides one housing for both the heating and air-conditioning coils.

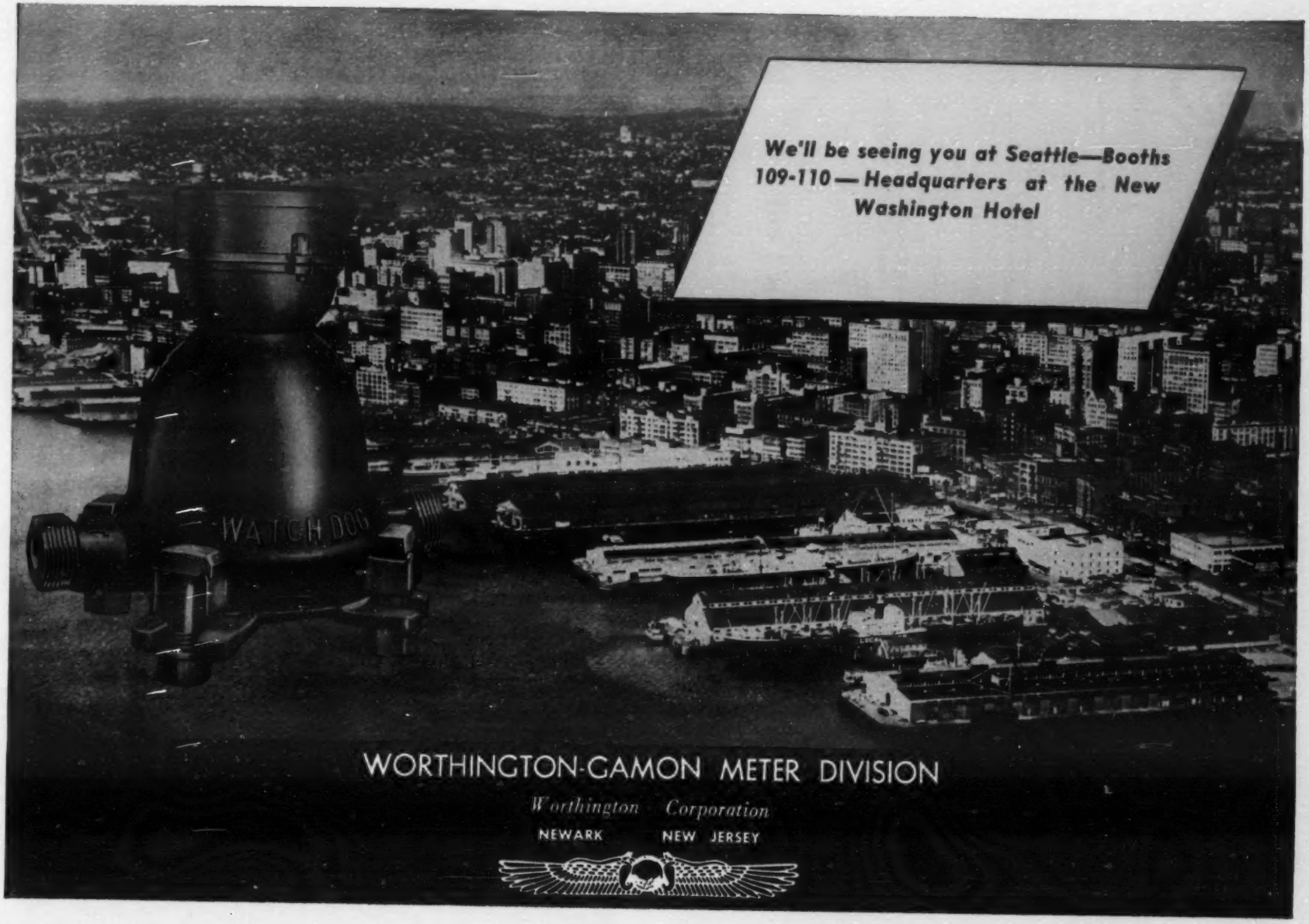
The Civic Center, when completed, will serve as a hub for all community life. The Center and an adjoining park together cover a 134-acre area in the geographic center of the city, and is already surrounded by newly built brick homes.

The Oak Park School District has under construction a new one-story high-school building, which will cost $1,500,000 and which is on a 33-acre site just south of the municipal building. To the east, on a 12-acre tract, the Lady of Fatima Church has begun construction on a 20-classroom school, with gymnasium, and will also build a church, rectory, and convent.

To the north, the Detroit Edison Company plans to construct a $250,000 substation, to be housed in a one-story contemporary building. To the west of the City Office Building, a 90-acre site is to be developed into the city's major park.



An architect's sketch of Oak Park's new Public Service Building, which was designed by George J. Bery, A.I.A.


We'll be seeing you at Seattle—Booths 109-110 — Headquarters at the New Washington Hotel
WATCH DOG
WORTHINGTON-GAMON METER DIVISION
Worthington Corporation
NEWARK NEW JERSEY

A Municipal Program For "Sick Time"

H. H. CROW, City Manager, Benton Harbor, Mich., has evolved a plan, approved by the Civil Service Board and adopted by the City Commission of Benton Harbor on April 5, for dealing with the problem of "sick time" for municipal employees.

In Benton Harbor, the civil service rules allowed one day per month sick time with pay, accumulative without limit. Mr. Crow's objective was to create more of an incentive to save up this sick time for its intended use, when employees are actually sick or injured, by provisions to pay for unused sick time upon separation or retirement.

The new plan provides that payment for unused accumulated sick time will be made at any time prior to an employee's separation from civil service on written application upon the following basis: up to and including 60 days, none; over 60 days, 50% of day rate for such excess; over 90 days, 60% of day rate; over 120 days, 70%; over 150 days, 80%; over 180 days, 90%, and over 220 days, 100%.

Upon an employee's separation from civil service, payment for unused accumulated sick time, including specifically any number of days which may have been accumulated toward the surrender or cash-in values provided for above, will be made on the following basis:

Retirement, 100% of day rate for entire number of unused days; death of employee, 100% of unused days; leaving city employment at their own request, 33⅓% of unused days; employees discharged will be paid for 15 of unused sick days.

Pennsylvania Local Government Conference Organized

ORGANIZATIONS in Pennsylvania aiming to further the interests of the various municipal units in the state have frequently felt the need for integrating the efforts of these different groups.

On February 17, after some preliminary work, representatives of the State Association of Boroughs, League of Cities of the Third Class, County Commissioners Association, Township Commissioners Association, Association of Township Supervisors, and State School Directors Association met in Harrisburg, Pa., to organize for the purpose of cooperating to preserve and foster home rule.

The group elected officers under the chairmanship of John H. Doherty, president of the State Association of County Commissioners, and appointed a By-Laws Committee to organize the Conference for efficient operation.

April 29 was selected as the date for the next meeting of the Conference.

Washtenaw County, Mich., Seeks Planning Director

A PLANNER with five years' experience in the county or regional field, able to deal with both rural and urban groups, is needed by Washtenaw County, Mich. Salary is open and is subject to negotiation. Persons interested should apply to John W. Hyde, Professor of Planning, 343 Architecture Building, University of Michigan, Ann Arbor, Mich.

Changes in Excise Taxes Affecting Municipalities

THE *American Municipal News* for April lists the various changes affecting municipalities in the new schedule of federal excise taxes which went into effect April 1, and urges that municipalities should secure the exemptions to which they are entitled in five major categories, as follows:

Manufacturers' Excise Tax; Tax on Transportation of Persons; Retailers' Excise Tax; Tax on Communications; and Tax on Admissions.

The AMA *News* may be obtained from the American Municipal Association, at 523 Transportation Bldg., Washington 6, D. C.

Shopping Centers a Threat to Downtown

VITAL PROBLEMS for municipal officials and downtown merchants are posed by the growing trend towards large suburban shopping centers, with ample parking space for customers and employees, as exemplified on pages 126-127 of this issue.

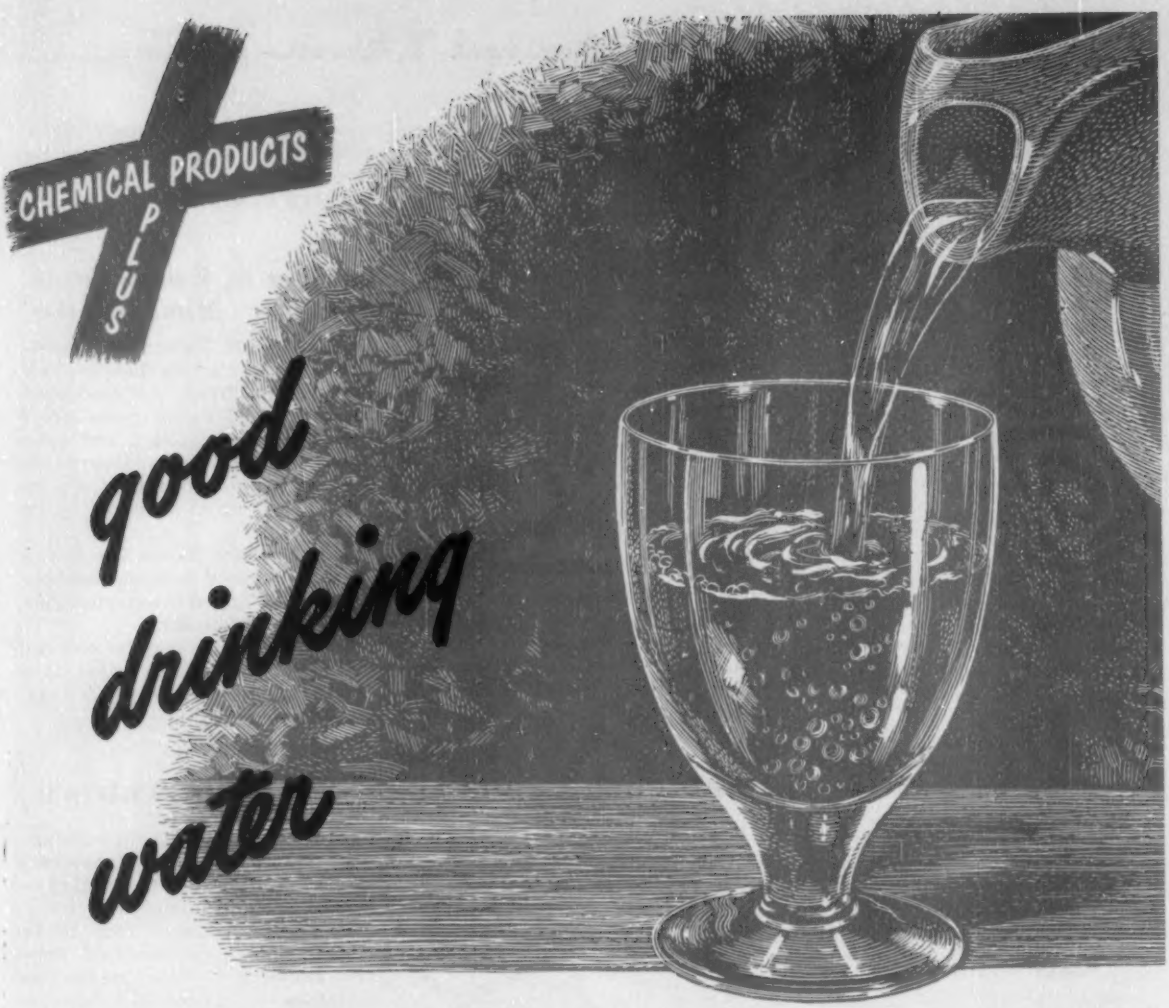
Location of shopping centers, operating and proposed, in New Jersey. (From an article on "Planned Shopping Centers," by the New Jersey Department of Conservation and Economic Development, which was reprinted in the March 1954 issue of *New Jersey Municipalities*.)

It is all too obvious that the facilities and conveniences of these new magnets to trade are serious threats to the business and the existing property values of the older commercial properties in cities, large and small, throughout the United States.

Because of the critical need for fundamental thinking on street design, transit service, and parking facilities for established business areas, THE AMERICAN CITY is giving special attention to various phases of these problems.

In this May issue the articles on pages 121, 159 and 185 are believed to merit special study, as do also the front cover and the articles on pages 133 and 137 of the April issue. Attention is called also to the articles in the 1954 *Municipal Index*, pages 947-950.

Planned shopping centers affect, of course, not only the areas *from* which they attract trade, but also the areas *to* which they attract it. Here is another challenge to municipal officials and planning and zoning authorities: so to control the areas affected by these new developments as to make them real assets to the communities in which they are located.



IS PURE • TASTELESS • ODORLESS

Your community is interested in *more* than just pure water. Local sanitation engineers are often faced with problems of disagreeable tastes and odors which cannot be controlled by regular water treatment methods.

Today, over 150 communities are using the Mathieson Chlorine Dioxide process to eliminate unpleasant tastes and odors. Chlorine dioxide is not only a dependable disinfectant, but its powerful oxidizing action...

- destroys tastes and odors from algae and other organic matter
- changes manganous salts to insoluble manganic compounds
- oxidizes objectionable compounds formed during regular chlorination
- helps maintain an active chlorine residual throughout distribution system
- is effective in even highly alkaline and softened water

Treatment of potable water with Mathieson Chlorine Dioxide is neither complicated nor expensive and it requires only the simplest of equipment. And Mathieson's comprehensive technical service is a PRODUCT-PLUS that assures you of a system best suited to your needs. Get complete information from your Mathieson representative or write today.

MATHIESON

MATHIESON CHEMICAL CORPORATION
Mathieson Industrial Chemicals Division
Baltimore 3, Maryland

2296

caustic soda • soda ash • chlorine • sulphur • sulphuric acid • bicarbonate of soda • ammonia • sodium nitrate • nitric acid • hydrazine products
sodium methylate • sodium chlorite • alum • hypochlorite products • dry ice and carbonic gas • ethylene glycols and oxide • methanol

Raymond Tarrant, chief of police (left), and Harley McMillen, city manager, look at a Traf-O-Teria courtesy box, mounted on a meter post. This picture was taken on South Main Street in El Dorado, Kans., home of Mr. McMillen who was the originator of the Traf-O-Teria plan for collecting charges for overtime parking.

An Indignant Rancher and a Parking-Meter Fine

By JAMES W. GREENBANK

THIS STORY began back in February 1951, when a rancher visiting El Dorado, Kans., was arrested and convicted in the Police Court for nonpayment of a parking-meter fine. Spurred by indignation, the rancher called a mass meeting to enlist support in a crusade for the removal of parking meters from the city's streets.

The municipal officials knew that there was some resentment against parking meters in El Dorado, but were startled at the attendance of 135 ranchers, farmers, and townsmen on a bad night when a heavy driving snow threatened any moment to turn into a Kansas blizzard.

The city manager, Harley McMillen, immediately began a careful investigation to determine why not only the rancher who called the meeting but a good many other substantial citizens were becoming so bitterly opposed to parking meters.

Further conferences revealed that almost without exception every one of them felt humiliated when forced to go to the police station and pay the dollar fine assessed for overparking.

After considerable study of the problem, the city manager developed the idea of a system where the motorist instead of being fined would be charged at an increased rate for any unmetered time used by him, and that payment of this charge could be made in boxes located on every fifth meter post, thus obviating the need for the over-parker to make a forced trip to the police station.

The depository boxes were made at a local machine shop from used oil-field casing, and, while not too sightly, they served the purpose. An ordinary coin envelope was used for the over-parking notice, with the following wording:

> Sorry, but you have overparked. The charge for this extra time, if paid within 24 hours, is 25 cents. If not paid in 24 hours, the charge is $1. You may pay this by placing 25 cents in this envelope and depositing it in one of the special boxes, painted yellow, which you will find next to one of the meter posts in this block. If you prefer, you may pay this at the traffic desk at the city building. An additional charge of 25 cents is made and an additional notice is issued for each hour a vehicle is overparked.

Plan Well Received

The plan met with immediate public acceptance, and even though the charge for overparking was reduced from a dollar to 25 cents, the city collected more money than before, due to the voluntary payment of nearly all the tickets issued. Even more important, no more protest meetings were held, the injunction suit against the city was dropped, and everybody was happy again.

Other cities with similar problems, learning of the happy outcome of El Dorado's parking-meter troubles, adopted the El Dorado plan with similar results. Many of them borrowed blue-prints of the El Dorado box and patterned their boxes accordingly.

Because of the great number of inquiries and the need for an attractive box designed specifically for this purpose, Mr. McMillen began working on the design of such a box. Obviously the box would need to be made of a quality material, as it would contain money that must be carefully safeguarded. It would need to be small, neat, and attractive in appearance as it was to be placed on the meter posts, and it should be light in weight so handling and shipping costs could be kept at a minimum. He found that an aluminum alloy would satisfactorily meet all these requirements and still not be too expensive.

With the idea of simplifying the accounting system, and saving time in the writing and handling of tickets and envelopes, he devised a special waterproof envelope and companion spot-carbonized stub to be used as a part of the system, which he named Traf-O-Teria, the name denoting the purpose of the system, i.e., self-service payment by the motorist of minor traffic fines.

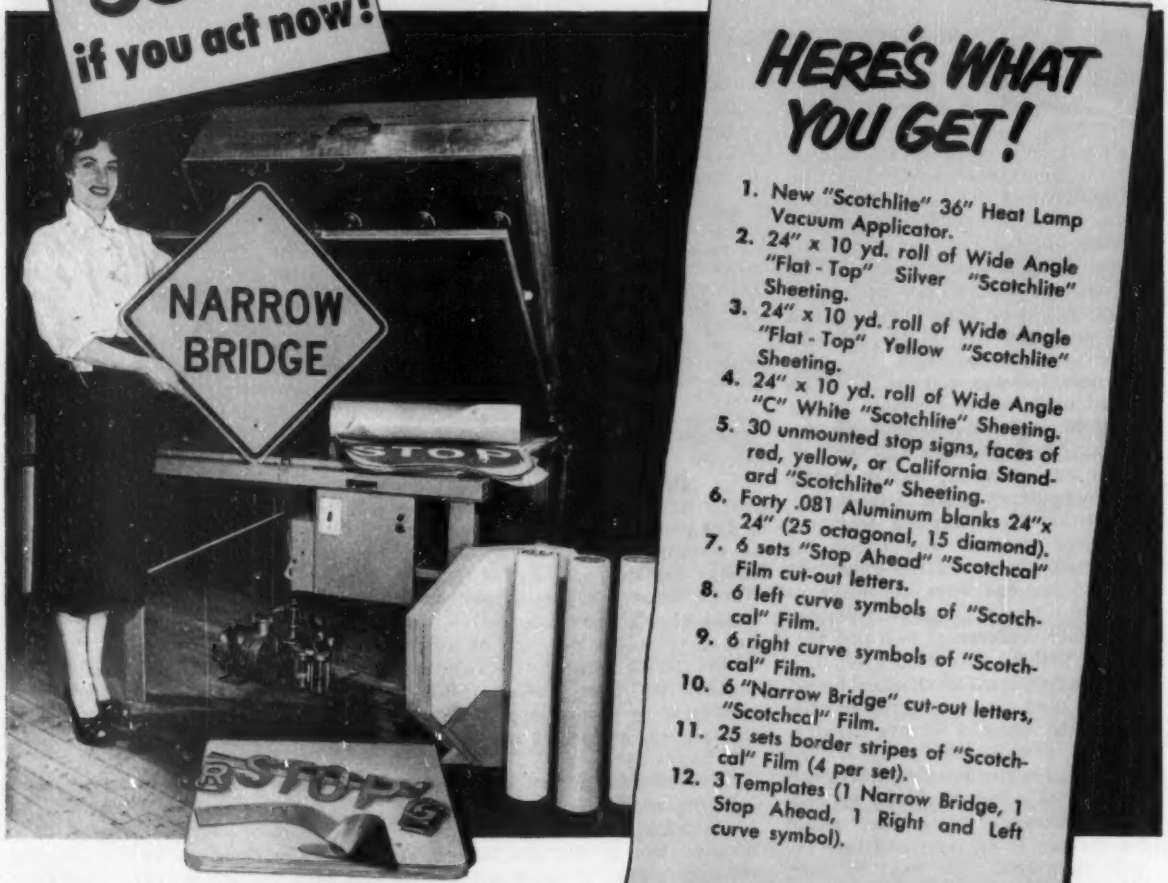
The Traf-O-Teria system has developed into a rapidly growing business, protected by U. S. patents and copyright applied for, and with main offices in El Dorado.

Thus, in a period of less than three years an idea born out of an indignation meeting during a Kansas snow storm has become a new and thriving business that is rapidly changing the basic philosophy underlying the enforcement of parking-meter regulations, resulting in good will for city officials, restoring the dignity of the overtime-parking violator, and taking the sting out of the payment for unmetered time.

Save $562.50 on everything you need for a complete modern sign shop

A $1,500 value for just $937.50 if you act now!

Kit includes a new, modern 36" fully-automatic vacuum applicator, and complete supplies of "Scotchlite" Reflective Sheeting and sign blanks. An ideal starter kit for refinishing or reclaiming old signs—everything you need for top-quality reflectorization of signs and delineators. Write today for complete information — offer expires June 30, 1954!



HERE'S WHAT YOU GET!

1. New "Scotchlite" 36" Heat Lamp Vacuum Applicator.
2. 24" x 10 yd. roll of Wide Angle "Flat - Top" Silver "Scotchlite" Sheeting.
3. 24" x 10 yd. roll of Wide Angle "Flat - Top" Yellow "Scotchlite" Sheeting.
4. 24" x 10 yd. roll of Wide Angle "C" White "Scotchlite" Sheeting.
5. 30 unmounted stop signs, faces of red, yellow, or California Standard "Scotchlite" Sheeting.
6. Forty .081 Aluminum blanks 24"x 24" (25 octagonal, 15 diamond).
7. 6 sets "Stop Ahead" "Scotchcal" Film cut-out letters.
8. 6 left curve symbols of "Scotchcal" Film.
9. 6 right curve symbols of "Scotchcal" Film.
10. 6 "Narrow Bridge" cut-out letters, "Scotchcal" Film.
11. 25 sets border stripes of "Scotchcal" Film (4 per set).
12. 3 Templates (1 Narrow Bridge, 1 Stop Ahead, 1 Right and Left curve symbol).

Reg. U. S. Pat. Off.

SCOTCHLITE
BRAND
REFLECTIVE SHEETING

The term "Scotchlite" is a registered trademark of Minnesota Mining and Manufacturing Company, St. Paul 6, Minn. General Export: 122 E. 42nd St., New York 17, N.Y. In Canada: London, Ontario, Canada.

3M COMPANY

"Fight-Blight" Plans for Old City Areas

"ENFORCEMENT," "conservation," "rehabilitation," and "renewal" are key words in the urban development vocabulary which has come into vogue on both national and local scenes within the past year. Interest in "fight-blight" plans has spread to many cities throughout the country, sparked by a variety of elements, including enlightened public officials, civic organizations, planning commissions, redevelopment agencies, popular national magazines, and real estate and home-building interests.

Practical Problems and Limitations

Gradually, well-organized and systematic programs are beginning to emerge in a few places, particularly those which recognize the many practical problems and limitations inherent in neighborhood conservation and rehabilitation efforts.

Several of these cities have had preliminary periods of experimentation with specific projects and approaches, heralded by extensive national publicity. However, there is no city which has as yet evolved a "model" plan that can be widely copied and guaranty success under varying local conditions. Nor is there any city with any substantial accomplishment to report, in the face of total growing housing needs.

The widely acclaimed New Orleans program, for example, described on pages 112 and 113 of the April issue, had succeeded early this year in rehabilitating, in a modest way, a demonstration block of *five* old houses, compared with the estimated 45,000 dwellings in New Orleans that do not meet minimum standards of livability, health, welfare, and safety.

No One Magic Solution

Questions of community stimulus and of how to finance rehabilitation programs on any scale are still largely unresolved. Even the questions of adequately financing housing surveys and block-by-block enforcement and inspection teams have encountered difficulties and time-consuming delays from many city councils.

These questions can and will be answered, with greater awareness of the facts—the damage to city structures through the toll of blight and slums, and the explosive social consequences. But municipal officials should never be led to believe that there is any one magic solution. Of one thing they can be sure—and that is that effective progress in halting the encroachment of blight and slums will require the closest teamwork between the central administration, department heads, the courts, and policy-making officials.

It will require perseverance—measured not in terms of a year or two, but in terms of 10-year programs. It will require the utmost cooperation between various levels of government on housing, redevelopment, health, school, highway and welfare programs. In short, it will call for every ounce of resources that the municipality can spare, coupled with the complete backing, support, and participation of leading civic groups.

New Slums for Old?

A great era of city rebuilding and city "renewal" is under way, for housing, business-district, and industrial-area development. But ironically enough, through the pressures that are exerted for the relocation of families displaced by public and private projects (and the ever-increasing housing needs for lower- and middle-income families) this era may create more concentrated blight and slum conditions than any which now exist.

Municipal officials must be prepared with forward programs for adding to the housing supply, coupled with vigorous, stiff determination to prevent housing-law violations and to take the profit out of slum dwellings that disgrace the municipal scene.

As a first step in acting on the total problem, in the light of their own city's needs, they should review some of the publications on the subject, and reports from cities that have already done some research and programming. Recommended are the following:

Urban Redevelopment: Problems and Practices. Edited by Coleman Woodbury. The University of Chicago Press, 5750 Ellis Ave., Chicago 37, Ill. March 1953. $7.50. See especially: Part IV: "Urban Redevelopment Short of Clearance: Rehabilitation, Reconditioning, Conservation and Code Enforcement in Local Programs," by William L. Slayton. Bibliography.

Renewing Our Cities, by Miles L. Colean. Twentieth Century Fund, 330 W. 42nd St., New York 18, N. Y. 1953. 181 pp. $2.50.

Local Development and Enforcement of Housing Codes, by Gilbert R. Barnhart. Division of Housing Research, Office of the Administrator, Housing and Home Finance Agency, in collaboration with Syracuse University. December 1953. 55 pp. Charts. 40 cents. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Blueprint for Neighborhood Conservation. A Working Manual by the Build America Better Council, National Association of Real Estate Boards, 1737 K St. NW., Washington 6, D. C. 39 pp.

Report of President's Advisory Committee on Housing Policies and Progress. December 1953. 377 pp. $1. Superintendent of Documents, Government Printing Office, Washington 25, D. C. (See especially proposals for establishment of Urban Renewal Administration, as new constituent agency of HHFA.) Also see proposed legislation incorporating these recommendations, S. 2938 and H.R. 7839, backed by the Administration.

Conservation and Rehabilitation of Major Shopping Districts, by Richard Lawrence Nelson and Frederick T. Aschman. Urban Land Institute, 1737 K St. NW., Washington 6, D. C. Technical Bulletin No. 22. $5.

Re-emphasis and New Directions in Redevelopment and Conservation. Report of Discussion, New York-Philadelphia Chapter Meeting, American Institute of Planners, November 1953. Mimeo. 3 pp. Available from Henry Fagin, Chapter President, Room 1800, 205 E. 42nd St., New York, N. Y.

A Fight-Blight Plan for Binghamton, N. Y. Broome County Planning Board, 209 County Court House, Binghamton, N. Y. December 1953. Mimeo. 70 pp.

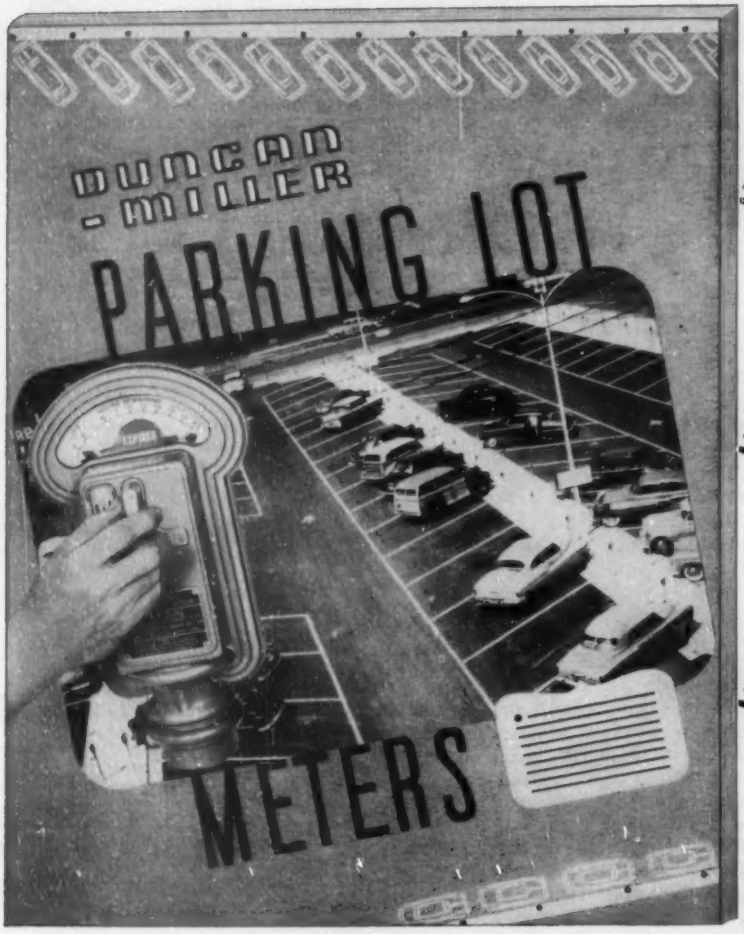
Enforcement and Conservation Program, City of Chicago. Office of the Housing and Redevelopment Coordinator, 69 W. Washington St., Room 1610, Chicago 2, Ill. Mimeo. 29 pp.

Conservation–Redevelopment for Denver. A Report of the Mayor's Housing Coordinating Committee, J. Robert Cameron, Chairman. Department of Health and Hospitals, West Sixth Avenue and Cherokee Street, Denver 4, Colo. January 1954. 29 pp. Mimeo.

Report and Recommendations, Committee on Neighborhood Conservation. Citizens Housing and Planning Council of New York, Inc., 20 W. 40th St., New York 18, N. Y. February 1954. Mimeo. 8 pp.

Conservation. A Report to the Conservation Committee of the Metropolitan Housing and Planning Council by its Conservation Study Staff, 69 W. Washington St., Chicago 2, Ill. 1953. 350 pp. 3 vols. $5 per vol.
Vol. I.—Main Problem Areas in Con-

(Continued on page 221)



"30 PAGES OF DATA JUST OFF THE PRESS"

"TELLS WHAT TO DO AND SHOWS HOW"

"SEND FOR THIS BIG NEW FOLDER TODAY"

Yes, hundreds of cities have OFF-STREET parking with no outlay of municipal funds—and so can you. This folder shows you the way to plan, design, and finance. A copy is yours for the asking.

DUNCAN PARKING METER CORP.

223 N. WOOD ST., CHICAGO 22, ILL. • FACTORY at HARRISON, ARKANSAS

Manufacturers of the DUNCAN-AUTOMATON fully automatic and the DUNCAN-MILLER manual parking meters

Airport Operating Hints

Universal Tow Bar

ONE "universal" tow bar, able to replace three bars formerly required to handle several planes, has saved many hours in plane handling on the ramp and in the hangar. This device has been in continuous use for over a year at the airport in New Orleans, La.

Made of 1½-inch-square tubing and completely welded, the bar is reinforced near the wheels with a ¼-inch steel plate. The wheels are 8 inches in diameter and are fitted with hard rubber tires. They have ½-inch solid steel axles that are operated on ball bearings. Two ¾-inch threaded-steel rods, equipped with plug or cup ends on screws, engage the plane's nose or tail wheels. At the tow end, a ⅝-inch steel plate engages the tow pin.

The 9-foot-long tow bar can accommodate the nose wheels of Navions, DeHaviland Doves, and Aero Commanders; and the tail wheels of Grumman Mallards and Lockheed Lodestars. According to its designer, A. G. Peenstra, chief inspector, A. & E. and Dami (C.A.A. Designated Aircraft Maintenance Inspector), who is pictured with it at the Pan Air Corporation. The device costs about $35 to construct.

Half-Tire Markers

PLACING half-tire markers around each tiedown anchor loop increases the life of tiedown ropes and permits planes to taxi over the iron loops without damage to its tires.

A discarded 6.00 by 6 airplane tire is cut in half and wired to the tiedown anchors. The identification number of the plane assigned to each location is painted on the sides of the tire to aid pilots in finding their parking spaces. By coiling the rope on top of the tire marker when it is not in use, the rope is kept off the ground and is in less danger of being damaged.

The device, illustrated at right, has been installed at the Westair, Inc., parking area at the Westchester County Airport, White Plains, N. Y.

Field Service Car

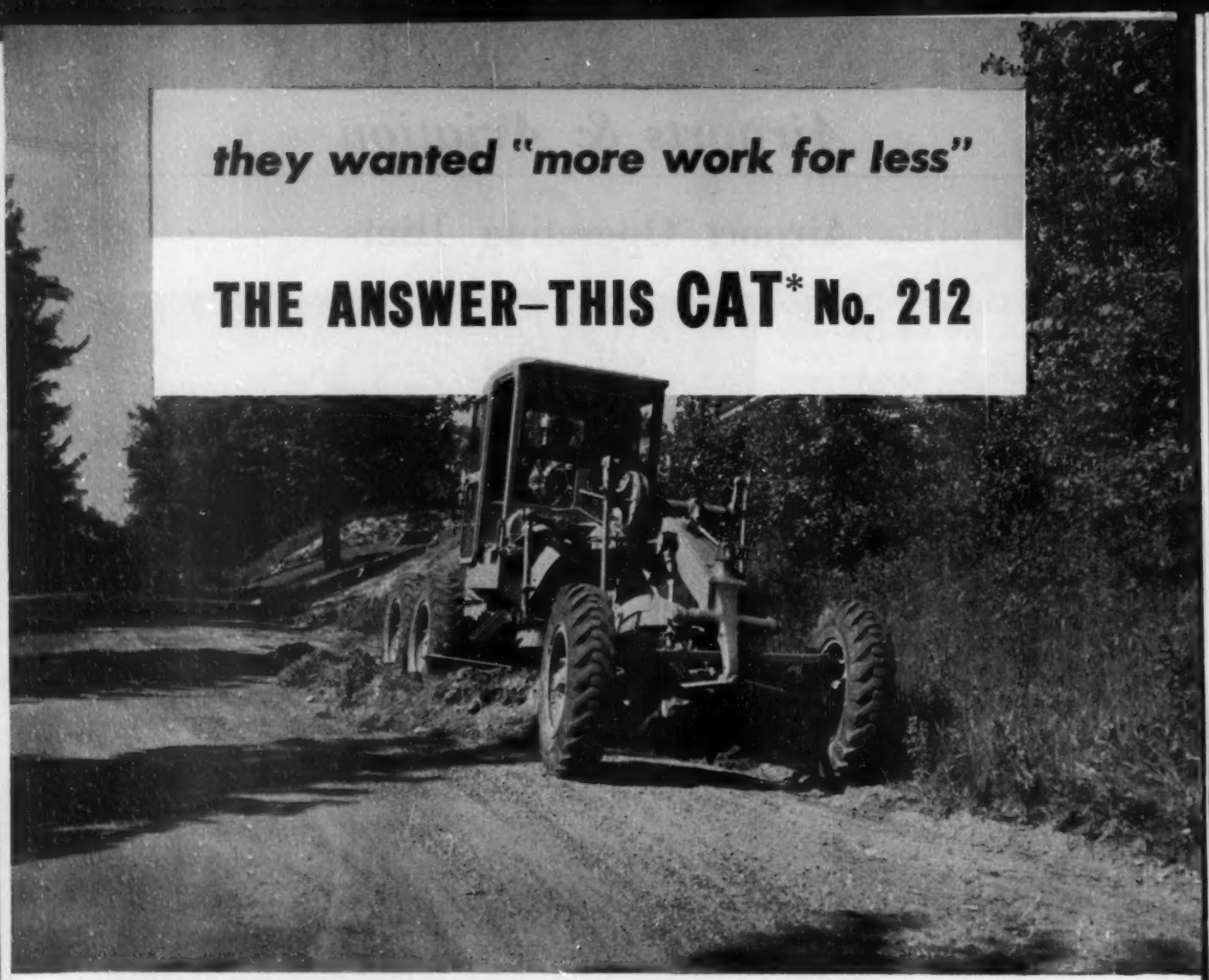
CONVERTED from a stock-model Willys station wagon, this "follow-me" type of service car is used at the Buffalo (N.Y.) Municipal Airport to meet transient planes and to ferry baggage and cargo to and from the administration and other field buildings. To allow control tower and pilot maximum visibility of the vehicle, the body is painted bright red, and the roof is white with large red initials and four trailer-truck type of red blinker lights mounted at each corner.

Equipped with standard VHF aircraft-type transmitter and receiver, it is in touch with the tower at all times. In addition, the car has a roof-mounted spotlight for locating planes in the parking area, a complete first-aid kit, and two 20-pound and one 10-pound fire extinguishers.

Leo Chase, Buffalo Aeronautical Corporation's service manager (right) and Harry Sparfeld, A. & E. (C.A.A. Certified Aircraft and Engine) mechanic, who converted the Jeep station wagon, are shown making final adjustments.

they wanted "more work for less"

THE ANSWER—THIS CAT* No. 212



"We needed a machine to handle our road work better," says Thomas J. Callahan, Superintendent of the Department of Public Works, Dalton, N. Y. "We wanted lots better work—more work for less labor and less operating cost." So he and other members of the board spent eight months looking at all makes of graders, watching demonstrations, talking to contractors. What was their decision? This Cat No. 212 Motor Grader.

The town of Dalton picked a winner. Mr. Callahan reports that the No. 212 does the same work in one day as three men formerly did in three days with a tractor and pull-type grader. It's used for street maintenance, ditching and pioneering new roads.

How do Caterpillar Motor Graders stand up? Here's a significant fact: more than nine out of ten ever built are still on the job. Completely manufactured by one company, they have perfect balance of weight, power and speed. The engine directly powers all controls, eliminating leaky, slower acting hydraulic lines. And, at *any* speed, it operates on low-cost No. 2 furnace oil without fouling, thanks to an exclusive fuel injection system.

These rugged motor graders are built for operator efficiency, too. The driver has easy access to a full range of blade positions without changing links. Sitting down, he has a clear view of the blade and the job. And powerful control brakes prevent creeping under load or vibration.

Add reliable dealer service to money-saving performance—and you have a machine that stretches your tax dollar. Ask your Caterpillar Dealer for an on-the-job demonstration. Call him today!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

Street Cleaning & Construction

Vacuum-Leaf Machine Gets New Duties

ALTHOUGH improved leaf collection is the primary function, nevertheless, it is only one of the tasks that we are assigning to our new vacuum-type collector. For example, we expect to put it on night duty in our downtown alleys to pick up litter wherever sweepers are unable to reach.

The vacuum machine will perform the regular duty of cleaning downtown gutters from 2:00 a.m. to 5:00 a.m. and thus relieve our shortage of whitewings. It will also clean the sidewalks of underpasses and viaducts when flushing is not possible.

The unit we are using is a Tornado Leaf Collector, made by the Omaha Body and Equipment Company of Omaha, Nebr. We believe that this single mechanism will replace one crew that would include a large machine sweeper, a loader, and three dump trucks.

The collector has a large tube for heavy-duty pick-ups and a small tube for pick-ups between cars and in inaccessible locations. It can pick up both wet and dry leaves which can then be stored in a 16-yard steel box. Wet leaves should be loosened. A fan, powered by a 45-hp industrial engine running at 1,800 rpm and capable of moving 10,000 cfm of air, draws the leaves into the box.

H. O. PATTON
Superintendent of Sanitation Services
Denver, Colo.

PHOTO COURTESY OF THE "DENVER POST"

Denver's Mayor Quigg Newton (center) joins Public Works Director Charles Berry (left) and Park Manager Thomas Campbell (right) in inspecting the leaf collector.

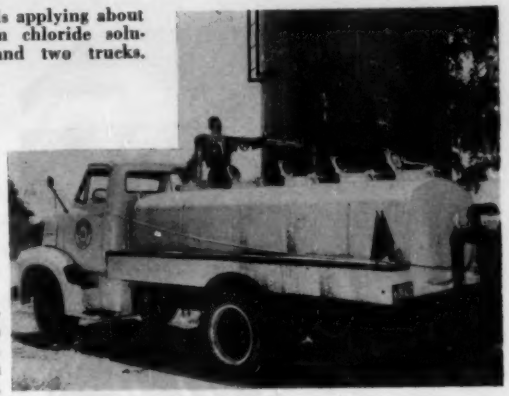
Secondary Streets Get Primary Attention

SECONDARY STREETS get primary service in Livonia, a city of 18,000 in southeastern Michigan. A chloride solution spreader, two trucks, and a Gradall excavator are all designed to solve the problems that these often neglected streets present.

The solution spreader applies calcium chloride to the street surface to lay the dust. The spreader's tank holds 1,000 gallons which is sufficient to cover 1 mile of 20-foot-wide streets.

The two new dump trucks bring the city's fleet total to six. The new units are mounted on Ford chassis and use Gar Wood hydraulically powered dump bodies. The excavators, of course, can be used for many purposes, from picking up dirt and loading trucks to removing snow, if need be.

To lay street dust, Livonia is applying about 1,000 gallons of a calcium chloride solution, using a spreader and two trucks.



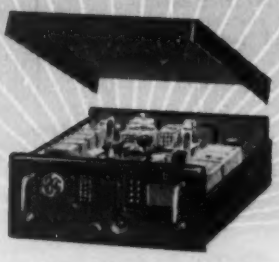
The new Gradall multipurpose excavating machine quickly loads Livonia's two new dump trucks, which are hydraulically powered.

A GREAT 450 MC UNIT

"Guarantee

G-E 2-WAY RADIO...YEARS AHEAD WITH SELECTIVITY

GUARANTEED FOR LIFE!



2-WAY MOBILE RADIO

SELECTIVITY GUARANTEED FOR LIFE!

✓ **SELECTIVITY GUARANTEED FOR LIFE...** New multi-coil IF transformers. Compare G-E specs *with any other!*

✓ **RESERVE POWER** at the station—40 watts output on all station equipment—continuous duty rating.

✓ **FULL 6/12 VOLT OPERATION.** Mobile unit functions from 6 or 12 volt source.

✓ **HIGH-Q CAVITIES** at *both* receiver input and output—your best insurance against TV interference.

✓ **4-CHANNEL OPERATION . . .** Here's *positive* assurance of performance on different frequencies!

✓ **290 KC LOW IF**—the right IF for mobile radio equipment!

SPARKS G.E.'s NEW "Policy"

TODAY, as always, General Electric stamps its products with a quality brand. Here is not just another piece of mobile radio gear to satisfy consumer need . . . here is a standard of performance for the industry to follow. IF tuning . . . guaranteed for life! Your interests deserve nothing less than the criteria G.E. has established for mobile radio performance.

Examine every feature of this outstanding 450 MC equipment. Compare *power . . . reliability . . . maintenance requirements* . . . because the story of G-E's superior design is right there for all to see . . . for all to take advantage of. Get the G-E 2-way radio story today!

NOW! Get this guarantee policy when you purchase *any* new G-E 2-way radio . . . *regardless of type!*

Get full information from your local G-E district representative or write direct to: *General Electric Company, Section X1054, Electronics Park, Syracuse, New York.*

You can put your confidence in—

GENERAL ELECTRIC

Which came first?

. . . we don't profess to know whether it was chick or egg. One first we do know about is the Nichols Monohearth, first circular mechanically stoked refuse incinerator, now more than ever the first choice of modern-minded municipalities for economical, dependable, odor-free refuse disposal.

More than 17,500 tons of daily Monohearth incinerator capacity are now in use in sixty-four municipalities. Write for more information.

Nichols Monohearth

Mechanically Stoked Refuse Incinerators

NICHOLS ENGINEERING & RESEARCH CORP. • 70 Pine St. • New York 5 • N.Y.

1637 N. Illinois St., Indianapolis 2, Ind. • 40 S. Los Robles Ave., Pasadena 2, Calif. • 1477 Sherbrooke St. W., Montreal 25, Canada

. . . and Nichols Herreshoff multiple hearth dryer-incinerators for sewage sludge disposal

Sewerage & Sewage Treatment

Drinking Water From Sewage

PASSING settled sewage through at least 4 feet of a fine, sandy loam makes the effluent bacteriologically safe for public drinking water, according to a study made for the California State Water Pollution Control Board by the Sanitary Engineering Laboratories of the University of California. The 28-month study at Lodi, Calif., was aimed at reclaiming sewage and industrial wastes.

Eight circular spreading basins, each 19 feet in diameter, were constructed with sheet-metal dikes. Spreading was studied with three liquids: fresh water, sewage-treatment-plant effluent having a BOD of about 10 ppm, and settled sewage with a BOD of about 100 ppm.

The soil through which the liquids passed was identified as Hanford, a fine, sandy loam. A highly treated sewage-plant effluent, with no more than 10 ppm of BOD, showed an ability to percolate through the soil at the rate of 0.5 acre-foot per day.

The tests disclosed that the most effective method of operating the spreading basin is to spread continuously for about one month, preferably with a liquid containing large amounts of organic matter. The basin is then allowed to rest until the moisture content is reduced to the permanent wilting point, which is reached when an application of water does not revive a rooted plant. Thereafter, cultivation of the dry soil seems desirable. Following this preliminary treatment, continuous application of a final effluent may be carried on for as long as six months.

A copy of the report can be obtained from the State Water Pollution Control Board, 721 Capitol Ave., Sacramento 14, Calif.

A Breakdown of Sewer-Service Charges

AT PRESENT, at least 581 municipalities, representing over 25% of the incorporated places with a population greater than 5,000, use sewer-service charges. With few exceptions, every city in the United States in this population group has the power to impose such charges.

Data from 28 cities indicate that these charges can finance all sewage-disposal costs in about 70% of the cases. In the remaining cities, the charges financed from 60% to 90%.

The average revenue per capita that these charges produce is $2.57 per year for cities over 100,000 population. For municipalities in other population groups, the averages range from $3.10 to $3.24 per year.

Charges are based on water use in about 55% of the cities reporting. Stand-by or minimum charges are frequently fixed in terms of the size of water meters. About 25% of the cities indicate that an adjustment is made in computing the charge during the summer months to allow for water sprinkling. About 30% of the cities base their charges on the number and type of plumbing fixture. A few cities use sewage meters to measure wastes of large industries.

Of the cities reporting, 31% require deposits guaranteeing payment. The deposit varies from $2 to $50. The tenant receives the bill for the charge in 53% of the reporting cities. The charge appears as a separate item on the water bill in 80% of the reporting cities. In 40% of the cities upon which the study is based, the bills are submitted monthly; in 30%, quarterly; and in 10%, annually. The remainder use mixed methods.

Only 58% of the reporting cities impose a penalty if the bill becomes delinquent. Approximately a 10% penalty is made in about 50% of the cases, regardless of whether it takes the form of a loss of the cash discount for prompt payment or an additional charge for late payment.

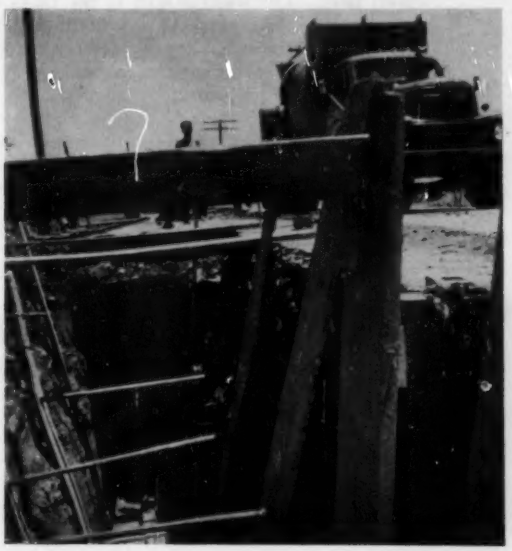
These findings are part of a special report issued by the American Public Works Association, 1313 East 60th Street, Chicago 37, Ill., entitled *Sewage Service Charges*. The report can be obtained at a charge of $2 to nonmembers and at a discount to members.

New Homes — New Trunkline Sewers

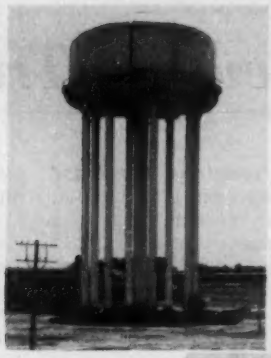
NEW TRUNKLINE sewers keep burrowing their way across Allentown as housing springs up in areas that had been thought would forever remain vacant. The current program includes 18- to 24-inch sanitary sewers plus a twin 54-inch storm sewer that eventually will become a single barreled, 72-inch line.

The sanitary sewer is being laid with vitrified clay pipe, jointed with Atlas GK hot-poured material. The line will be completely enveloped in a concrete casing. The storm sewer is laid with Lock Joint concrete pipe that is protected internally with bituminous lining.

City Engineer Earle W. Meckley chose clay pipe because this line serves a growing industrial as well as residential section. Industries include electrical works, battery plants, and others whose wastes promise to be troublesome.



A White truck and Jaeger mixer deliver the concrete which encases the clay sanitary sewers of Allentown's expansion program.



HORTON TANKS

provide modern water storage for "Old Baghdad"

Old historically, but increasingly up-to-date in municipal development, the ancient city of Baghdad has a modern water system that compares favorably with most large cities throughout the world.

Water for the system is taken from the Tigris River, settled in automatically sludged sedimentation basins, filtered and chlorinated—then stored in Horton® elevated tanks. Six of the tanks, located throughout the distribution system, are shown here. The water stored in the tanks is available under dependable gravity pressure any hour of the day or night for domestic or commercial needs. Development of the system began in 1924 when the Government organized the present Water Board to undertake the program.

If your own municipal water system is inadequate or needs to be brought up to date, write our nearest office for estimates or quotations on a Horton elevated tank. There is no obligation on your part.

HORTON

WELDED STEEL STORAGE TANKS

CHICAGO BRIDGE & IRON COMPANY

Plants in Birmingham, Chicago, Salt Lake City, and Greenville, Pa.

Atlanta 3	2114 Healey Bldg.
Birmingham 1	1502 North Fiftieth St.
Boston 10	1002—201 Devonshire St.
Chicago 4	2127 McCormick Bldg
Cleveland 15	2236 Midland Bldg.
Detroit 26	1501 Lafayette Bldg.
Havana	402 Abreu Bldg.
Houston 2	2101 C & I Life Bldg
Los Angeles 17	1503 General Petroleum Bldg.
New York 6	3308—165 Broadway Bldg.
Philadelphia 3	1616—1700 Walnut Street Bldg.
Pittsburgh 19	3202 Alcoa Bldg.
Salt Lake City 4	501 West 17th South St.
San Francisco 4	1533—200 Bush St.
Seattle 1	1301 Henry Bldg.
Tulsa 3	1625 Hunt Bldg.

Water Supply & Treatment

Water Works Puzzles in Five Maryland Cities

Too Much Natural Fluoridation

IN EASTON, a municipality of 5,000 in east central Maryland, the water supply had been naturally fluoridated without anyone knowing it. City officials were impressed by the good dental health records of cities where fluorides were added to the water to produce the optimum of 1 ppm.

Investigation revealed that Easton's water contained approximately the same amount of natural fluorides. Furthermore, a new well shows a fluoride content of approximately 4 ppm, so that the city now has the problem of lowering its fluoride content to 1½ ppm maximum. William Klumbine is water-works superintendent.

Corrosion of Copper Tubing

AT SALISBURY, a city of 15,000 in the southern part of the state, an investigation indicated that aggressive water attacked the copper tubing in house plumbing and was probably responsible for the presence of both copper and iron in the water. When these elements became oxidized, they colored the water red and green.

To correct this condition, Superintendent C. O. Wooten installed a Permutit degasifier at the pumping station to replace a tray aerator. Tests on the operation of the degasifier showed that it reduced the carbon dioxide content of the water from 21.2 to 2.4 ppm. Correspondingly, the pH was raised from 6.0 to 7.0. Facilities are also being provided to add alkali to bring the water up to the carbon-stability point.

Submersible Pumps for Central Chlorination

IN OCEAN CITY, a municipality of 1,300 in southeastern Maryland, submersible pumps solved an unusual water-supply problem. The pumping arrangement that was being used was not operating satisfactorily and was apparently aggravated by the operation of the chlorinators. A groundwater study, conducted by the State Department of Geology, Mines, and Water Resources, disclosed the safe yield of all existing wells.

The city then installed Byron Jackson submersibile deep-well pumps in three of the wells of one field, with suitable piping arrangements so that all water can be chlorinated at a central point.

Bad Taste and Odors from Old Well

IN ABERDEEN, a city of 3,000 in northeastern Maryland, the water commissioners abandoned a well that was causing bad taste and odors in the city's water. To replace the loss of water, the city obtained permission to drill two new wells at more favorable locations on the Army's Aberdeen Proving Ground property. The wells, equipped with Byron Jackson deep-well turbine pumps, deliver water at the rate of 540 gpm (gallons per minute) to two Permutit degasifiers that eliminate free carbon dioxide.

For pH correction, an Omega volumetric, dry-chemical feeder applies soda ash. A Wallace & Tiernan solution-feed chlorinator, having a maximum capacity of 20 pounds per 24 hours is used to chlorinate the supply. Three Fairbanks-Morse horizontal centrifugal pumps, rated at 250 gpm each and powered by 10-hp electric motors, deliver treated water to the distribution system. Thomas W. Krouse is water-works superintendent.

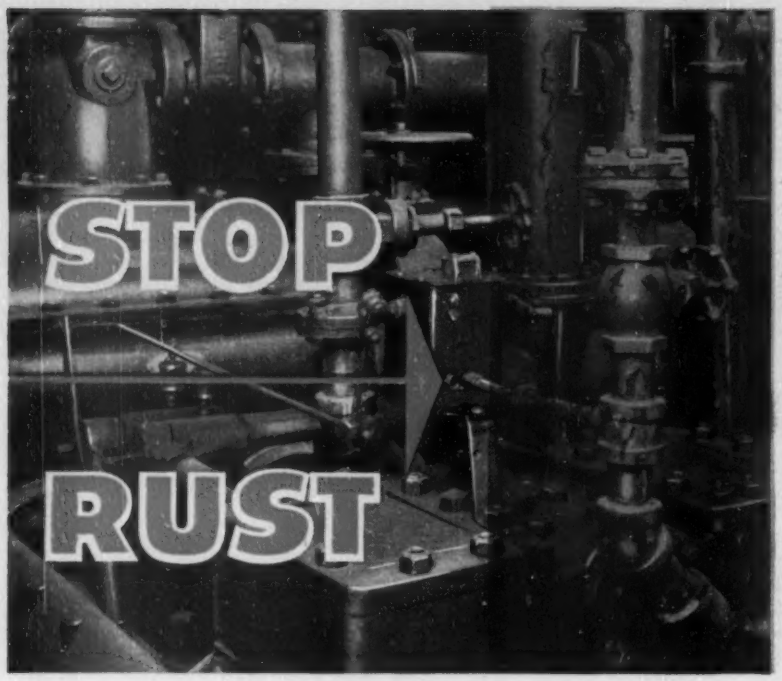
Filter Bed Difficulties Cause Red Water

IN ANNAPOLIS, a city of 11,000 in the central part of the state, "red water" troubles in the distribution system were traced to malfunction of the filter beds.

To repair the filters, Water Superintendent J. C. O'Keefe, removed the sand and gravel, washed, regraded, and replaced them. Underdrains and wash-water troughs were cleaned and painted; and the filters were provided with Palmer surface agitators and Wallace & Tiernan volumetric, dry-chemical feeders that apply lime for pH correction. The pH control, which had been discontinued, was resumed in an effort to reduce corrosion in the distribution system. Both sedimentation basins are now in operation and the water quality is greatly improved.

In addition to these repairs, the rate-of-flow and loos-of-head gauges, which are of the conventional type and are used in the filters, were also repaired.

EDITORIAL NOTE: This information has been prepared with the cooperation of the Maryland State Department of Health and the cities involved.



STOP RUST BEFORE IT STARTS!

use TROPICAL ACB PRIMER

The Rust Preventive that Saves 50% Painting Costs!

Fighting rust means constant expense. *Win this fight by stopping rust before it starts!* You can, with ACB Primer, as thousands of municipalities and industrial concerns do. On rust-free iron or steel it is a long-lasting barrier against rust . . . so long-lasting that many users estimate it saves up to 50% painting costs! Rust-breeding moisture can't penetrate its fast-drying, moisture-proof, paint-anchoring surface. Outdoors and indoors, even in filtration and sewage plants, it resists severe moisture. ACB Primer FIRST makes steelwork LAST! • Use Tropical heavy-duty paints for heavy-duty service: New rubber-base Cementkote for *outside* cement, cinder block, asbestos siding; Rhinamel for hydrants, signs, standards; Toconamel for graders, tractors, shovels.

FREE! **Get the facts on rust prevention! Your business letterhead request brings useful, money-saving facts on rust prevention on buildings, equipment. Write TODAY!**

THE TROPICAL PAINT & OIL CO., 1112-1284 W. 70th St., Cleveland 2, Ohio

BRAXMAR BADGES

Standard Badges Since 1879

Write for catalog illustrating badges for Police, Fire and other City, County and State Officials
John O. Veit, Pres.

C. G. Braxmar Co., Inc.
216 E. 45th St., New York 17, N. Y.

Kill the ROOTS and you kill the WEEDS!

***NEW* Dolge N P Weed-Killer**
Can be used with confidence by anyone. Kills **all** vegetation **quickly** —SEE RESULTS IN A FEW DAYS! Spray, sprinkle or use as **dry powder** —works **fast** by working into waxy plant surfaces and penetrating to leaves, stems, roots. Non-inflammable, non-volatile, non-corrosive.

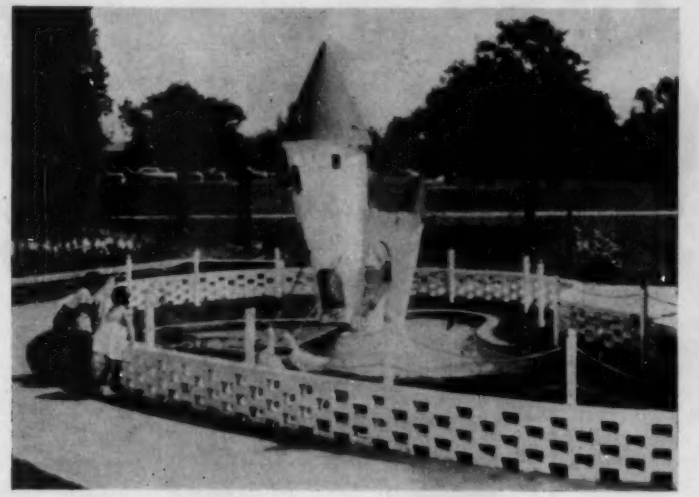
Dolge S S Weed-Killer
Kills **all** vegetation by working down to roots; sterilizes soil and prevents wind-blown seeds from sprouting. Economically sprayed on driveways, paths . . . reduces hand-clipping time and labor.

E.W.T. **SELECTIVE**
WEED-KILLER kills broad-leaved plant pests without injury to good lawn grasses.

Write for literature and see your DOLGE SERVICE MAN

Dependable DOLGE
WESTPORT, CONNECTICUT

Pack More Fun Into Playgrounds



By KEITH A. MacDONALD
Executive Director
Greater Vallejo Recreation District
Vallejo, Calif.

THE PRESENT-DAY PLAYGROUND usually consists of age-old standard equipment that needs some 1954 revolutionizing. A playground should be radically different in its environment from anything that the average child encounters in his customary day-to-day existence. It should be an area that immediately stimulates his interest, requiring physical accomplishment and creativeness, and the use of his imagination.

The usual play equipment of the conventional type found on our playgrounds may be divided into two categories—the functional, and the recreational. Included in the former are climbers, giant strides, high bars, horizontal bars, horizontal ladders, monkey bars, rowing swings, trapeze rings, and turning bars. Those in the latter classification are the merry-go-round, slides, swings of all types, teeter-totters, and crawl-thru-tunnels.

Goosey, Goosey, Gander (above right) and There Was an Old Woman Who Lived in a Shoe (above) are two of the many features that delight the younger set at Children's Fairyland.

Creative equipment is really a collection of stage props for the child's play. Some examples would include a barrel, an old car (wheels set in cement) an old streetcar (no glass in windows), a rowboat or lifeboat, a sandbox—always popular, and a series of cement culvert pipes.

New and different types of standard equipment items, or ways of using old ideas in more attractive forms, are suggested in the following list:

Sliding down the seal's neck
Sliding down the giraffe's neck
Sliding down the whale's mouth
Swinging on the lion's tail
Teeter-totter over the back of a clown
The painting of clowns or animals as near life size as possible, as decorations on walls, as back rests on benches, or as fences separating infants' from older children's play areas.

Swinging on the lion's tail is done by placing two painted lions sitting atop the swing cross-piece. The swing chains are covered with a canvas hose, and under the seat is attached the frayed end of a rope.

The teeter-totter is supported (apparently) by the V-shaped back of a clown resting on his hands and knees, painted on plywood.

One of the most natural things for a youngster to do is to dig—with his hands and not with a shovel—so clean sand should be provided in cement boxes or circular pits at least 40 to 50 feet across.

Jungle gyms are all right, but if the series of pipes fitted together in sequence like ladders were joined in the form of an arch, not higher than six feet off the ground, it would give almost the same effect, less danger, and would challenge boys and girls to a greater extent.

Each piece of apparatus and equipment should be painted in gay colors, as we in Vallejo now paint our standard equipment, or as Oakland has fixed up at its Children's Fairyland.

BOX ALARMS ARE POSITIVE ALARMS

Large city or small town — you need the advantages that a fumble-proof Municipal Fire Alarm System can give you.

The small community can get these advantages at an average annual cost of less than a dollar a person per box, including maintenance:

FAST, always accurate, alarm to the Municipal Fire Department keeps fire and water damage low.

LOWER insurance rates frequently result when a complete Fire Alarm System is installed by a community.

For the full story of safe, sure alarms with a Municipal Fire Alarm System, consult us on making a survey. The System can be started now, extended in years to come.

There is no substitute for the Municipal Fire Alarm System

THE GAMEWELL COMPANY
NEWTON UPPER FALLS 64, MASS.
In Canada: Northern Electric Co., Ltd., Belleville, Ont.

GAMEWELL®

THE BOX IS POSITIVE

Reduces Human Error

Public Safety

Communications Truck with Standby Power Trailer

Pasadena's mobile control center, including a glimpse inside the electric power unit trailer, a product of Onan & Sons.

AS A PART of its civil defense setup, Pasadena, Calif., has assembled a Chevrolet communications truck with standby power trailer equipped with an Onan Model 10-kw electric generator. The truck body is by Standard Carriage Works of Los Angeles, and the trailer was built by Ets-Hokin & Galvan, Onan distributors and electrical specialists of Wilmington, Calif.

The truck carries five Motorola 60-watt transmitter and receiver sets, a 25-position telephone switchboard, a 125-watt public address system, spotlights, and regular police-radio equipment.

The unit will serve as a control center in any disaster area. Should the main control center at Pasadena's City Hall disappear, this mobile unit can take over. Total cost of the complete unit was $18,000.

By mounting the generating plant in the trailer, that unit will also be available for power generation at special emergencies, and for on-the-spot hospitals. Ted Smith, Civil Defense Director, is in charge of the unit's development, and technical details are under the supervision of H. B. Calvert, radio engineer of the Pasadena Police Department.

Civil Defense Progress in Suburban St. Louis

The coordinated civil-defense drill, which was held in University City, Mo., was the first of its type in the "critical target" St. Louis area, reports Victor A. Ellman, Director of Civil Defense for University City. It demonstrated that it is possible in the Midwest to keep the interest of volunteers high in civil defense despite insulation from international crisis. Recruiting and training, which began two and a half years ago, has been directed toward building an auxiliary fire brigade and an auxiliary police force, which will ultimately number complements of 110 to 170 respectively. Volunteers are available not only as a bulwark against atomic attack, but also as helping hands in the event of any major disaster.

now—

a 4-WHEEL DRIVE Excavator-Loader with *plus* features for *plus* performance

TRACTOMOTIVE TL-12 TRACTO-LOADER

4-WHEEL DRIVE for excellent traction — excavating or loading — even under adverse ground conditions . . .

PLUS HYDRAULIC TORQUE CONVERTER DRIVE for smoother, faster operation. No ramming or clutching, no engine stalling . . . easier maneuvering, snappy bucket action!

PLUS CLUTCH-TYPE TRANSMISSION Eliminates most shifting. Operator simply pushes a lever to go forward, pulls it back for reverse. He can work all day without shifting gears on short-haul jobs!

PLUS REAR-WHEEL POWER STEERING This advantage together with all-wheel drive means easy steering and maneuvering under all operating conditions.

PLUS NEW, DYNAMIC ALLIS-CHALMERS POWER-CRATER ENGINE Gives you high-octane performance on regular gasoline.

• • •

Yes, here's 4-wheel drive PLUS . . . PLUS all the advantages Tractomotive offers you in its famous TL-10 Tracto-Loader — the outstanding performer on bulk material handling. Choose the model that fits your needs.

Wire, write or call for a demonstration NOW!

POWER-CRATER is an Allis-Chalmers trademark

Weight: 12,000 lb.
Bucket Capacity: 1 cu. yd.
Speeds — 4 forward, to 20 mph . . . 4 reverse, to 25 mph
Brake Hp. — 63

MODEL TL-10 for all types of bulk material handling . . . with short, 11-ft. turning radius, torque converter drive, clutch-type transmission and Allis-Chalmers POWER-CRATER engine. ¾ cu. yd. bucket, weight 11,400 lb., 63 brake hp.

See your nearest Allis-Chalmers Industrial Tractor Dealer

TRACTOMOTIVE

TRACTOMOTIVE CORPORATION, DEERFIELD, ILLINOIS

Tracto-Loaders • Tracto-Shovels, Side Booms and Hydraulic Rippers for Allis-Chalmers Crawler Tractors • Loader and Shoulder Maintainer for Allis-Chalmers "D" Motor Grader

Get What You Want—No Charge!

Please check the list of interesting free catalogs on this and following pages. To obtain the literature you want, write or wire directly to the manufacturers at the addresses given. If you prefer, you may circle the identifying number on this coupon and mail to THE AMERICAN CITY, *470 Fourth Ave., New York 16, N. Y., and we will see that catalogs are sent to you without expense or obligation.* 5/54

236	237	238	239	240	241	242	243	244	245		
246	247	248	249	250	251	252	253	254			
255	256	257	258	259	260	261	262	263	264		
265	266	267	268	269	270	271	272	273			
274	275	276	277	278	279	280	281	282	283		
284	285	286	287	288	289	290	291	292			
293	294	295	296	297	298	299					

Name .....**Position** .....

Address .....

Down Go Diesel Fuel Costs

236 The Hamilton 21½ x 27½ diesel engine will give you high-grade performance while using low-grade, inexpensive heavy, unblended residuals for fuel. Performance records show remarkably clean exhausts with no engine deposits or undue engine wear. For complete information, write BALDWIN-LIMA-HAMILTON, HAMILTON, OHIO.

Make Water Filters Modern

237 Water filters, the most important safeguards to a good, sanitary supply of water, have been undergoing significant changes during recent years. Your city, be it small or large, deserves the best water purification equipment available. For complete information on dependable water filters, designed for longer service, write ROBERTS FILTER MFG. CO., DARBY, PA.

Stops Rust With One Coat of Paint

238 A single coat of Subox or Subalox paint is all you need to protect water tanks, fire hydrants, street standards and fences against rust and corrosion. These long-wearing paints contain a rust-inhibitive pigment of lead-suboxide. They provide easy, economical maintenance, particularly in water works and sewage plants. Get full details from SUBOX INC., 10 FAIRMOUNT PLANT, HACKENSACK, N. J.

Well Screens

239 The well screens available from this company are designed for less drawdown and greater specific capacity, and offer lower pumping cost per million gallons of water. They are fully described in literature from EDWARD E. JOHNSON, INC., ST. PAUL 14, MINN.

Cleans Outdoor Arenas Quickly

240 One Wilshire Sweeper replaces some 40 men with brooms, cleaning parking areas, airports, tunnels and outdoor arenas. Each sweeper features a trash collector that picks up cartons and bottles, and a side sweeper to get into corners and gutters. Complete information will be furnished by the WILSHIRE POWER SWEEPER CO., 526 W. CHEVY CHASE DR., GENDALE 4, CALIF.

Easier Ways to Cut or Thread Water Pipe

241 Water-works men and others using pipe threading or cutting equipment are offered a new "Quick-Action" catalog which describes and illustrates the complete line of Beaver pipe tools. Included in this line are three Beaver portable pipe-threading machines, and three of the company's portable power units. A copy of the catalog, with accurate prices, is available from BEAVER PIPE TOOLS, INC., 300-500 DANA AVE., WARREN, OHIO.

Fire Hydrants

242 American fire hydrants are available in three standpipe styles: one-piece, two-piece, and swivel-head, with outlets varying to meet requirements. Inlets include bell, flange, mechanical joint for transite pipe, and iron pipe, with lugs for strapping. Write the AMERICAN FOUNDRY & MFG. CO., 1015 HEBERT ST., ST. LOUIS, MO.

Concrete Pressure Sewer Pipe

243 If you are planning sewer force mains, sewer lines free from infiltration, or subaqueous sewer lines, write for *Price Pressure Sewer Pipe*, a new folder that explains the advantages of using concrete pressure pipe. Made by PRICE BROTHERS CO., 1806 E. MONUMENT AVE., DAYTON 1, OHIO, concrete pressure sewer pipe features high structural strength and bottle-tight joints. The company also offers non-pressure concrete sewer pipe with rubber gasket, and regular concrete sewer pipe.

"Electronic Witch" Pipe Finder

244 You can locate buried pipe, conduits, and metal objects with greater accuracy and in less time, with the "Electronic Witch" pipe finder introduced by FISHER RESEARCH LABORATORY INC., PALO ALTO, CALIF. Housed in an unbreakable fiberglas cabinet, the new electronic instrument contains a sensitive leak detector circuit in the receiver and, with the addition of a few low-cost accessories, is easily transformed into a leak detector. A free copy of the "Electronic Witch" folder will be sent on request.

Kills Odors, Sample Free

245 Use Orthosolv at refuse dumps, in sewage plants, and for refuse cans and trucks. Readily emulsified in water, this effective orthodichlorobenzene deodorizes quickly at less cost. It is easy to apply, and can be used with street flushers, pressure pumps, or hand sprayers. For complete information and prices, plus *a free trial sample*, write SOLVAY PROCESS DIV., ALLIED CHEMICAL & DYE CORP., 61 BROADWAY, NEW YORK 6, N. Y.

New Ball Valve For Water Works

246 Constructed of three principal parts, the body, rotor, and operating mechanism, Smith manual-type ball valves are designed for 150 psi working pressures with 125 psi, A.S.A. flanges (C.I.). The new line features tight, simple closure, and multiplication of leverage, and is free from vibration. Standard-flanged, bell, and plain ends are available. Address the S. MORGAN SMITH CO., YORK, PA.

Paving Breakers, Air Compressors

247 *Bulletin 87-P* describes and illustrates the full line of low-cost, easy-to-operate Joy "Silver Streak" paving breakers, designed with cadmium plating and a new, patented dual valve. Also discussed are Joy air compressors, rock drills and related equipment. For your copy, write JOY MFG. CO., OLIVER BLDG., PITTSBURGH 22, PA.

Stops Termites; Ends Decay

248 Wood that is brushed, sprayed, or dipped into Avenarius Carbolineum lasts 2 to 10 times longer than untreated wood, extending the life of fence posts, park benches, bridges, and pile foundations. The low-cost, wood-preserving oil protects public buildings against "tunneling termites," rot and decay. It leaves a lasting stain, reducing repainting costs. For a new booklet, complete with prices, write CARBOLINEUM WOOD PRESERVING CO., 528 W. HIGHLAND BLVD., MILWAUKEE 3, WIS.

(Please turn to page 33 for more Bulletins)

Salem got the "Big 3" Will your city?

Out here in Ohio, Salem wanted a 20-inch supply line that would *last a 100 years or more,* be *strong enough to be virtually shatter-proof,* and give them *sustained high carrying capacity.*

They picked Price Pipe, because it gave them *every one* of the "Big 3": *long life, great strength* and *sustained capacity.*

Rochester, N. Y. picked Price Pipe for the same reasons. So did Dayton, Ohio, Saginaw, Michigan and many more.

Will your new water line meet all three requirements?

If you want the best pipe today's engineers can design, specify Prestressed Concrete Steel-Cylinder Pipe.

Tell your consulting engineer to check with our engineering department for sizes, weights, tests and laying information.

Price Brothers Company

1812 East Monument Ave. • Dayton 1, Ohio

Concrete Pressure Pipe for Water Supply, Subaqueous, Pressure Sewer and Culvert Installations

Obtain this Literature Free of Charge!

Write directly to the manufacturers or use the coupon on page 31

Cement-Mortar Lining Stops Pipe Leaks

249 "Centrilining" cleans and centrifugally lines pipe with cement mortar, permanently checking leaks, tuberculation and interior corrosion, while increasing the pipe's carrying capacity. Since the process is applied to pipe in place, excavation is unnecessary, and traffic need not be interrupted. A free booklet discussing the Centrilining process will be furnished by the CENTRILINE CORP., 140 CEDAR ST., NEW YORK 6, N. Y.

Three Water and Sewage Treating Units

250 THE DORR CO., STAMFORD, CONN., offers three new units for the effective, low-cost treatment of water and sewage. The first of these, the Dorrco Aldrich PeriFilter System, cuts construction costs at water filtration plants up to 40%. The Dorrco Hydro-Softener continuously softens water supplies by base exchange resins, and the Dorrco Densludge Process reduces sewage sludge volume up to 50%. Bulletins are available describing each new unit.

New Pumps Fight Fire and Insects

251 These high-pressure pumps are available in 11 sizes ranging from 3 gpm at 250 psi, to 800 gpm at 1,000 psi. They can be incorporated into fog fire trucks for effective fire extinguishing, or used to spray pest control liquids in parks and buildings. In addition, the pumps will effectively apply cleaning solutions to motor vehicles, and may be used for water-painting and white washing. Write THE HARDIE MFG. CO., HUDSON, MICH.

Police, Fire and Park Department Uniforms

252 Uniforms for policemen, firemen, civil defense officials, and park employees are custom-tailored and fitted to individual size by the MAIER-LAVATY CO., 315 S. PEORIA ST., DEPT. M1, CHICAGO 7, ILL. A wide range of fabrics are used, serges, whipcords, and gabardines, each woven specifically for uniform service, and insuring years of hard wear. Write for details.

Selecting the Best Street-Name Sign

253 Before your city can choose the street-name sign that will best serve existing needs, complete information is needed on the types of signs available, their permanence of legibility, and the types of posts and fixtures for their economical installation. This and other helpful information is contained in a detailed report issued by MUNICIPAL STREET SIGN CO., INC., 773 MEEKER AVE., BROOKLYN 22, N. Y. Copies on request.

Dependable Fire Engines

254 How does a fire department select its fire engines? According to the AMERICAN-LaFRANCE-FOAMITE CORP., ELMIRA, N. Y., the choice rests on the unit's record of consistent, dependable operation, and the manufacturer's ability to render service for the life of the engine. These features are discussed and illustrated in *Extra Values*, a new booklet available on request.

Do Your Municipal Ordinances Need Revision?

255 If municipal ordinances are to be of any value to city officials they must be kept up to date, properly codified, and classified according to subject matter. In addition, they should be carefully edited and checked against the laws of your state. MICHIE CITY PUBLICATIONS CO., CHARLOTTESVILLE, VA., specialists in municipal code work, will do the job for you, completing it with a comprehensive general index. Write for details.

Pneumatic Ejector for Low-Volume Sewage

256 Designed for capacities to 20 gpm with a 20-foot head, and for use with either a 3- or 4-inch inlet and discharge fitting, this packaged pneumatic sewage ejector will efficiently handle low flows at less cost than a centrifugal pump. Packex has a hermetically sealed pot, eliminating odor and gases, and operates without bearings in the pumping unit. There are no stuffing boxes to repack, and no shafting to keep aligned. Write YEOMANS BROTHERS CO., 2000-3 N. RUBY ST., MELROSE PARK, ILL.

Portable Warning Flasher for School and Danger Zones

257 Protect school children, motorists and unsuspecting pedestrians with the Patrolite Flasher, a railroad-type portable signal with lights that flash on and off alternately. Each Patrolite has two 7-inch lights that can be seen for three or more city blocks. Wording is black on yellow-baked enamel, and the signal has 8-inch wheels for easy handling. Detailed information on this distinctive warning flasher is available from THE PATROLITE CO., BOX 266, WARSAW, IND.

Fast Loading from Stock Pile into Trucks

258 Cities can load sand, gravel, and similar bulk materials from stock piles into trucks at rates up to 3 cubic yards per minute. B-G bucket loaders dig, lift, and convey bulk material in one continuous high-capacity flow. Furthermore, the truck driver can operate the loader to load his own truck. Two models are available: model 543, a self-propelled unit mounted on a tractor-type chassis; and model 82A, a crawler-mounted, 3 cubic yard per minute bucket loader. Get catalogs from the BARBER-GREENE CO., AURORA, ILL.

Meets All Your Municipal Construction Needs

259 In the President's Economic report of January 28th, he stressed the need to build at least $8,000,000,000 of new highways, $6,750,000,000 of new schools, and $1,500,000,000 of new hospitals annually for the next 10 years, and $1,800,000,000 of water and sewerage facilities annually for the next 5 years. The more than 6,500 contracting firms represented by THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC., MUNSEY BLDG., WASHINGTON 4, D. C., are prepared to do this job now, quickly, efficiently and at less cost. Write for literature.

Collecting Parking Fines

260 A number of communities are making it possible for traffic violators to pay their fines with minimum inconvenience, by installing these time-saving "pay stations." The Fine-O-Meter is easily attached to your parking meter standards. It is fully described in literature from the DUNCAN PARKING METER CORP., 835 N. WOOD ST., CHICAGO 22, ILL.

Portable Pipe Threader

261 Thread ¼- to 4-inch pipe in the shop or field with Port-A-Pony, a portable pipe threader powered by a built-in ½-hp reversible motor. This handy device opens and closes large gate valves, and drives low speed winches used to pull electric cable through conduit. It will drive flexible or rigid shafts, replacing power-take-off units. Details on the Port-A-Pony will be sent by the THREAD-EZY MFG. CO., 336 N. SHIAWASSEE, CORUNNA 2, MICH.

Does Your Tax Accounting Quickly and Accurately

262 A typewriter-accounting machine with direct multiplication, multiplies, computes and totals tax installments; writes records, tax receipts, and bills; and accumulates column totals, all in one operation. The most complicated tax accounting problem is handled quickly and easily. The operator has only to enter the valuation, reducing the possibilities of error. For a free copy of *New Speed, Ease, Simplicity in Tax Accounting*, address the BURROUGHS CORP., DETROIT 32, MICH.

Street-Lighting Lamps

263 Installed on streets and thoroughfares throughout the country, Amplex street-lighting lamps effectively withstand the vibration and jolts of fast-moving traffic, maintaining their high light output, and burning longer. The weatherproof bulbs are made of moisture-resistant hard glass, with style and wattage varying to meet your local requirements. For full data, write the AMPLEX CORP., DEPT. K-4, 111 WATER ST., BROOKLYN 1, N. Y.

Refuse Collection Truck

264 Efficient, low-cost refuse loading is facilitated by the automatic, continuous loading and packing featured in the new Roto-Pac. This dependable refuse-collection truck has an escalator compactor body, capable of handling straight ashes, garbage, or mixed refuse. It has a small hopper opening which reduces spillage. Further data on the Roto-Pac may be had by writing the CITY TANK CORP., 53-09 97th PL., CORONA, L. I., N. Y.

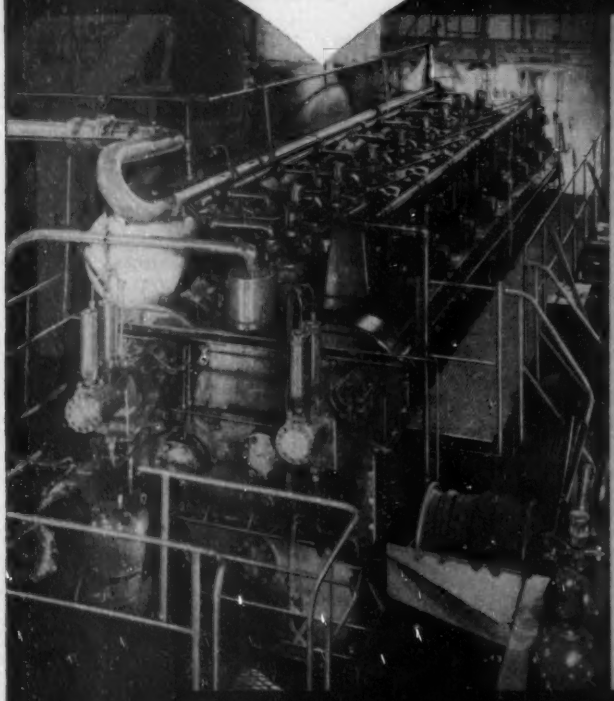
Aerial Maps Speed City Planning

265 Every city official knows that effective city planning depends on an accurate, up-to-date map. Not all however, realize that aerial maps are available in less time and at less cost than those produced by ground surveys. The ABRAMS AERIAL SURVEY CORP., LANSING 1, MICH., will furnish photographic mosiacs, large atlas sheets with a scale of 100 feet to the inch, and a complete coverage of your city with stereo prints. Write for details.

(Please turn to page 37 for more Bulletins)

HAMILTON 21½ x 27½ DIESEL

burns heavy, unblended residuals like this...



ANALYSIS (by E. W. Saybolt & Co.) of 1 Gallon Sample of #6 Fuel Oil Burned in a Great Lakes ore carrier's Hamilton engine:

Specific Gravity at 60° F.	0.9705
Gravity, API at 60° F.	14.3
Flash, PM CC	235° F.
Fire, C.O.C.	375° F.
Visc. SU at 100° F	4965 Sec.
Visc. SF at 122° F.	183 Sec.
Pourpoint, ASTM	50° F.
Saybolt Univ. at 210° F.	169
Sulfur, ASTM	0.80%
B.S. & W.	0.3%
B.T.U. Per Pound HV	18,516
Hydrogen	11.46%
B.T.U. Per Pound LHV	17,443
Oxygen (By difference)	0.90%
Specific Gravity at 160° F.	0.9358

HAMILTON DIVISION • HAMILTON, OHIO

BALDWIN • BLH • LIMA-HAMILTON

with an exhaust as clean as this!

without deposits or undue wear!

(Excerpt from letter by oil company representative)

"Each year, because of our great interest in this ship, we have had several of our engineers and technicians present at time of annual overhaul to check on the results secured from the use of our products.

"It was felt by all this year that the engine was just about the cleanest engine we have ever observed in many years of marine service. Especially so, considering the use of the varying types of heavy bunker fuel oil.

"The complete absence of varnish or other deposits, in the cylinder liners and pistons; the absence of stuck rings; and the minimum of deposits in the liner ports was remarkable. It would appear that liner wear and piston ring wear have become stabilized at a normal, or possibly even subnormal, rate."

These facts add up to this . . . for stationary or marine service, Hamilton Diesels are by far the soundest investment you can make!

BALDWIN-LIMA-HAMILTON

● Noon or midnight the loading area of this Ryerson plant looks much the same because we work 'round the clock to make sure that you get Ryerson Steel when you need it. Carbon steel, alloy steel, stainless—every kind is on hand, in practically every shape and size. Your requirements can be set down where you want them, quickly, cut to size and ready for immediate use. Just call the nearest Ryerson plant.

PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N. C.
CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO
MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

RYERSON

Which Catalogs Interest You?

Write directly to the manufacturers or use the coupon on page 31

Road Shoulders— A Safety Factor

266 Even the most careful driver can lose control of his car when he hits a rutted, soft or washed-away shoulder. To help control this driving hazard, Allis-Chalmers has developed a low-cost "maintenance package." It is the Model D motor grader which, with attachments, rebuilds shoulders, loads surplus material into trucks and materially reduces over-all maintenance costs. For literature, write ALLIS-CHALMERS TRACTOR DIV., MILWAUKEE 1, WIS.

Aluminum Traffic Signs Won't Rust

267 Crack the protective paint film of an ordinary street sign and watch the rust spread, destroying legibility and creating a traffic hazard. Do the same to an aluminum sign, and note the difference. An Alcoa aluminum traffic sign won't deteriorate. Repairs can wait while the sign stays on the job. Cities save money installing these signs, too. Weighing only half as much as steel, they are easy to handle and erect. Write ALUMINUM CO. of AMERICA, 1976-D ALCOA BLDG., PITTSBURGH 19, PA.

New Ways to Fight Fire

268 A variety of new products, each introducing an effective, low-cost method of firefighting, is offered by the ROCKWOOD SPRINKLER CO., WORCESTER 5, MASS. There is a foam eductor for introducing foam liquid into hose lines; a proportioning system for use when pressure is maintained by pump; and a FogFoam nozzle that discharges FogFoam, a solid Foam stream, or high-velocity waterfog. Also under truck and ground-sweep nozzles, a ball-type shut-off, and hydraulically or manually controlled Type FFF FogFoam turret nozzle.

Guarantees Automatic Operation

269 Water and sewage plants, pumping stations, and similar municipal installations, are assured dependable automatic operation in any weather. The Adlake mercury relay features time-delay characteristics that are fixed and non-adjustable. These characteristics are immune to normal line voltage fluctuations or ambient temperatures from –38° to 200° F. For full information, write THE ADAMS & WESTLAKE CO., 1176 N. MICHIGAN, ELKHART, IND.

Playground Equipment

270 A complete line of playground equipment ranging from a sturdy combination swing-slide and see-saw outfit, to a heavy-duty park bench, is available from this company. Portable and stationary picnic grills are featured for recreation areas, and for public swimming pools, there are official regulation one-meter diving boards. Request literature from the AMERICAN PLAYGROUND DEVICE CO., ANDERSON, IND.

Quick-Drying Traffic Paint

271 Centerlines painted with Catalite reflective compound dry in six minutes, remaining clearly visible in any weather. The paint is easy to apply without a bead dispenser. It is described in full in literature from the CATAPHOTE CORP., TOLEDO 10, OHIO.

Make Your Own Meter Box Barrels

272 Water departments can save money on outside meter settings by making their own concrete meter box barrels with Ford Singl-use Fiberforms. These forms are made for 15-, 18-, and 20-inch 1D barrels, and in lengths of 15-, 18-, and 24 inches. For especially deep settings, two Fiberforms are used. THE FORD METER BOX CO., INC., WABASH, IND., will send full information on request.

Rubber Joints for Sewer and Drain Pipe

273 Tylox rubber gaskets pack the joints of tongue-and-groove or bell-and-spigot pipe under compression, forming a flexible, mechanically-tight seal. Furthermore, they do away with mortaring, caulking, and collaring, speeding the installation of sewer and drain pipe. Made of a special rubber, compounded to resist sewage- and industrial-waste acids, Tylox joints won't corrode or crumble. They are offered by the HAMILTON KENT MFG. CO., 225 GOUGLER AVE., KENT, OHIO.

Motor Grader Succeeds on Variety of City Jobs

274 Use this time-saving unit for building and maintaining city streets—backfilling over sewers, water mains, and gas pipes—and leveling parking areas, parks, and playgrounds. In winter, use it to clear the street of ice and snow. The Adams motor grader has eight overlapping forward speeds, a high-arch front axle for clearance, and positive mechanical controls. It is made in several sizes, with a wide range of blade adjustments. Request literature from the J. D. ADAMS MFG. CO., INDIANAPOLIS, IND.

Low-Cost Air for Sewage Treatment

275 Whatever the size of your sewage-treatment plant, Roots-Connersville blowers will provide the necessary air for aeration tanks and activated sludge tanks at less cost. Included in the company's *dual-ability* line are engine-driven and motor-driven rotary positive blowers, motor-driven centrifugal boosters, gas pumps, and a variety of R-C positive displacement meters. For further information write ROOTS-CONNERSVILLE BLOWER, DIV. of DRESSER INDUSTRIES, INC., 16th and MARSHALL AVE., CONNERSVILLE, IND.

Hydraulic Crane Serves Street, Water & Sanitation Departments

276 On sewer and water-pipe installations, and hydrant and valve settings, the ¾-yard Hydrocrane with its telescoping boom reaches under branches and between buildings, easing the pipe into place. On excavating work, it digs trenches and manholes, and uncovers pipe leaks; and on yard work, it reaches into box cars and between stockpiles to load trucks quickly. A variety of attachments are available with the unit, including a hydraulic catch basin cleaning bucket. Address the BUCYRUS-ERIE CO., SOUTH MILWAUKEE, WIS., for complete information.

Increase Your Water Supply

277 Make certain your community has an adequate supply of pure water this year by installing a Ranney collector made by RANNEY METHOD WATER SUPPLIES, INC., 841 ALTON, COLUMBUS 19, OHIO. One such unit at Kirkwood, Mo., yielded 75% of designed capacity last summer, although the area stream flow and rainfall was 43% below normal. A free booklet, *Industrial and Municipal Water*, sent on request.

"Electronic Brain" Replaces Police Officers

278 Replace police officers at busy intersections with electro-matic controllers, the new "electronic brain" designed to expedite traffic flow efficiently. Operating without volumetric limitations, electro-matic controllers continually adjust to the ever-changing patterns of traffic volume, clearing intersections faster. They are made by the AUTOMATIC SIGNAL DIV., EASTERN INDUSTRIES, INC., NORWALK, CONN.

Street Sweepers with Low Maintenance

279 All street dirt — including bricks, bottles, cans, and sticks — passes between the deflector bar and broom of the Model "40" motor sweeper, and is then flicked forcibly into the forward end of the hopper. The unit operates without conveyor, elevator, or other complicated mechanisms, assuring minimum maintenance. It is described in detail in a new catalog from the AUSTIN-WESTERN CO., AURORA, ILL.

Grating, Stair Treads for Municipal Plants & Walkways

280 The advantages of using Irving gratings for the floors of water, sewage, and other municipal plants, and of using the company's stair treads for stairways, ladders, and fire escapes, are fully discussed in *Catalog No. F400*. Self-cleaning, Irving gratings provide safety and comfort for walking and working. They are rigid, long-wearing, and fireproof, in addition to being easy to handle and install. Free copies will be furnished by IRVING SUBWAY GRATING CO., INC., 5056 27th ST., LONG ISLAND CITY 1, N. Y.

Self-Service Parking

281 Operate public parking lots for less by replacing attendants with new coin-activated gates from EMRO DISTRIBUTORS, 120 LaSALLE ST., CHICAGO 3, ILL. These parking lot gates rise automatically when coins are inserted, and lower seven seconds after rear wheels clear the treadle. They are easy to install and operate, and may be purchased outright, or leased for less than $3 a day, per gate.

Emergency Electric Power

282 The City of Larned, Kans., uses a Cat D397 electric set as both a regular part of its light plant, and as a dependable emergency standby in case of power failure. The unit operates on low-cost No. 2 furnace oil, and is made in 12 sizes up to 315 kw and 500 hp. It is fully described in literature from the CATERPILLAR TRACTOR CO., PEORIA, ILL.

(Please turn to page 38 for more Bulletins)

AN ANNOUNCEMENT OF ATOMIC IMPORTANCE

A NEW M-SCOPE PIPE FINDER

STOP..HOLD UP ON ALL PIPE

FINDER PURCHASES STOP

After 12 months of research, testing and development, Fisher Research Laboratory is proud to announce its new *"Electronic Witch"* M-Scope pipe finder.

THE FACTS ARE STARTLING:

1. The new ***"Electronic Witch"*** will out-perform and out-last any other pipe finder . . . will give greater accuracy . . . sharper . . . more pronounced indications of buried pipes, metal objects . . . is much less sensitive to outside interference .

2. Fisher's new M-Scope cabinets are made of special moulded unbreakable fiberglas, the very latest word in electronic instrumentation. Won't scratch nor stain. Can't be damaged by water. No more splinters, dents.

3. EVERY new ***"Electronic Witch"*** contains a super-sensitive leak detector circuit in the receiver. With a few inexpensive accessories you can have a ready-made Leak Detector.

4. AND most startling of all! The new ***"Electronic Witch"*** COSTS LESS TO OWN—ONLY $162.50!!! and LESS TO MAINTAIN!

There are many other features you will fully appreciate when you use this great new M-SCOPE . . . . 50% less "B" battery consumption; elimination of conventional loop antennas and beat oscillators to assure unsurpassed stability; the new Super-Power control for greater depth and tracing range. For more details and facts write for our new **"Electronic Witch"** folder.

FREE TRIAL OFFER

Sensational free trial offer: We'll send our **"Electronic Witch"** on a free 10-day trial basis if your company orders now. If not completely satisfied return it. Fair enough?

Fisher RESEARCH LABORATORY INC.
1961-65 UNIVERSITY AVE.
Palo Alto, California
DAVENPORT 2-4646

More-Literature

Write directly to the manufacturers or use coupon on page 31

Revised Water Works Handbook

283 A completely revised edition of Rockwell's pocket-size water works handbook contains 28 added pages of water meter data, including gear charts, cutaway drawings of 8 principal types of meters, maps, and blank memo pages. Also specifications for cast iron and standard wrought iron pipe, specification tables for all Rockwell meters, and a wealth of general information. For your copy, write ROCKWELL MFG. CO., PITTSBURGH 8, PA.

Fluorides for Dental Health

284 Sodium fluosilicate, known also as silico fluoride, gives the water department its most economical bargain in this dental health program, according to the records of a growing number of cities. Of all the compounds that will apply the fluoride ion to the water in concentrations recommended by medical and dental health authorities, sodium silico fluoride is the most reasonably priced. This, coupled with its ease of handling, accurate feeding and trouble-free operation, has been responsible for its popularity. For full information, write the TENNESSEE CORP., 1028 CONNECTICUT AVE. NW., WASHINGTON 6, D. C.

Food-Waste Disposer for Schools and Hospitals

285 Easy to install in schools, hospitals, and other public institutions, the Enterprise food-waste disposer does away with unsanitary garbage cans, odor, flies, and insects. It cuts costs two ways, on can replacement and garbage collection, by handling tons of average waste per day. Water spray combined with centrifugal action automatically cleans the unit after each use. Address inquiries to ENTERPRISE ENGINE and MACHINERY CO., 18th & FLORIDA STS., SAN FRANCISCO 10, CALIF.

Easier Street Construction and Maintenance

286 A 20-page brochure describing the Warner & Swasey Gradall, and showing the machine in operation on 19 different types of excavating and allied earthmoving chores is announced by the GRADALL DIV. of WARNER & SWASEY, CLEVELAND, OHIO. The brochure stresses the fast, easy way the Gradall goes to work constructing and maintaining streets and roads, illustrating 16 quick-change boom attachments, and listing full specifications. Charts are used to illustrate the Gradall's working and lifting capacities.

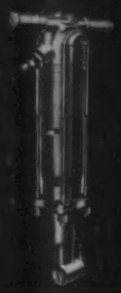
Water Standpipe Boosts Distribution Pressures

287 If your municipal water system is suffering from inadequate pressures and undue pressure variations, you can solve the problem with a Horton reservoir or the proper size Horton elevated tank. A 1,000,000-gallon Horton standpipe installed at Clearwater, Fla., raised minimum distribution pressures in the city's water system 100%, and reduced pressure variations to a normal fluctuation. A copy of *Horton Steel Reservoirs and Standpipes* will be furnished by the CHICAGO BRIDGE & IRON CO., 2127 McCORMICK BLDG., CHICAGO 4, ILL.

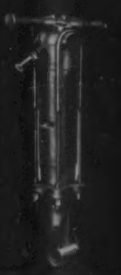
(See page 40 for more Bulletins)

JOY PAVING BREAKERS

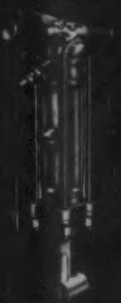
. . . WHEN DEMOLITION IS YOUR AIM!



K-89 **SUPER HEAVYWEIGHT** This 90 lb. bruiser will knock the starch out of those tough, heavily reinforced concrete sections.



K-81 **HEAVYWEIGHT** Strikes faster, heavier blows than comparable breakers. Is easier to hold and operate. Raps right through the toughest jobs.



K-51 **MEDIUM WEIGHT** A hard-hitting but very easy-handling Breaker designed for thin-section concrete and other average demolition jobs.

THE THRIFTY JOY DUAL-VALVE

MAKES AIR DO MORE WORK!

Permits higher drilling speeds with lower air consumption. Effectively lowers drilling costs.

Joy Paving Breakers are cadmium-plated *inside and out*—and you know what that means. The cadmium stops rust and corrosion, prevents scoring, and speeds up the running-in of the new tool. Lubrication is controlled by the throttle. Each movement actuates a mechanism which shoots the proper amount of oil to all working parts.

You've a dual-purpose tool with a Joy Breaker, too. Swap the chuck housing for a driving shoe and guide, and . . . PRESTO . . . you're holding the world's finest Sheeting Driver!

Joy Breakers offer less jarring and operator fatigue . . . less maintenance and replacement. Interchangeability of parts allows a smaller parts inventory. • Descriptive bulletins tell all. Write *Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.* In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

Consult a Joy Engineer

JOY

CONSTRUCTION EQUIPMENT MANUFACTURERS FOR OVER HALF A CENTURY

WAD C 4602

ONE GRAVELY TRACTOR
Powers 3 Mowing Tools!

Cut mowing costs—make only ONE investment in the power unit for ground maintenance tools. 5-HP Gravely gives you your choice—from 21 different tools—including three mowers!

REEL MOWER for fine lawns, quickly converted to 72" Gang Mower by attaching Gang Units. Add Sulky, cover more ground faster with less fatigue. ROTARY MOWER for lawn and weed cutting . . . with optional LEAF MULCHER assembly. SICKLE MOWER for tough weed and brush cutting jobs!

And remember, with Gravely, you have *twice* the power of the usual power mower!

PLUS 3 SNOW REMOVAL TOOLS

Snowblower, Snowplow, and Power Brush attachments make snow removal fast and easy . . . you change from job to job by removing and replacing only four bolts . . . suit the tool to the job or season in minutes!

free!

PROOF... BY FREE DEMONSTRATION!

Yes, cut costs . . . and we will prove how you can . . . how you get more for your money when you get Gravely! A FREE demonstration is yours on request . . . *at no obligation.* Or write for "Power Vs. Drudgery" catalog, FREE!

GRAVELY TRACTORS, INC.
BOX 72 DUNBAR, W. VA.

Catalogs for You

Write directly to the manufacturers or use coupon on page 31

Pipe, Valve, Leak Detectors

288 Small, accurate instruments that work quickly locating buried pipe, valves, valve boxes, and leaks, are designed by THE DETECTRON CORP., 5420 VINELAND AVE., NORTH HOLLYWOOD, CALIF. Each is easy-to-handle and simple-to-operate. Four models include the "505" pipe detector, "303" box and valve detector, "LD-22" leak detector, and "505-C" combination pipe-leak detector.

Three Ways to Identify Equipment

289 Letter and identify trucks and other municipal equipment with easy-to-apply trucksign transfers, a spray mask stencil, or brushing stencils. Available in any shape or number of colors, in sizes up to 20 - x 30-inches, the transfers are designed for application on smooth surfaces such as door panels or truck panels. Larger, irregular surfaces can be lettered with a spray mask stencil, and miscellaneous, expendable equipment with brushing stencils. Detailed information on all three methods is available from WARD'S TRUCKSIGN TRANSFERS, 8504 LYNDON AVE., DETROIT 38, MICH.

Helps Water & Sewage Officials Plan a Laboratory

290 *Catalog No. 4B* describes in detail the complete line of sectional furniture, equipment and accessories for laboratories, manufactured by Metalab. Also helpful information for water and sewage works technicians on planning a new laboratory or modernizing an old one. The company offers free engineering and design services, analysis of space economy, and counsel on utilizing both equipment and facilities. Address METALAB EQUIPMENT CORP., HICKSVILLE, L. I.

Street Castings

291 BUFFALO PIPE & FOUNDRY CORP., BOX 55, STATION B, BUFFALO, N. Y., designs municipal castings for use in valve, service or roadway boxes, manhole rings and covers. These castings are offered in every size and style, and are fully described in *Bulletin M-11*, available on request.

Installs Pipe Without Digging

292 You don't have to tear up pavement and lawns to install pipe underground. A Greenlee pipe pusher will do the job quickly and easily, eliminating extensive ditching and backfilling. Using the new unit, one man can push the pipe under obstacles. Two models are available with a special power pump. Address the GREENLEE TOOL CO., 2032 COLUMBIA AVE., ROCKFORD, ILL.

Wedge Gate Valves for Water and Sewage Works

293 Everything about iron-body wedge gate valves, including how they are constructed, and where to use them, is included in *Bulletin* 107. Both outside-screw-and-yoke and non-rising stem models are featured, and complete working pressures are conveniently listed. Write the KENNEDY VALVE MFG. CO., ELMIRA, N. Y.

(See page 44 for more Bulletins)

Lithographed on stone for U. S. Pipe and Foundry Co. by John A. Noble, A. N. A.

CAST IRON PIPE being unloaded as shown above may be for use in the city's water, gas or sewerage system. The more-than-a-century service record of cast iron pipe in this country is a strong reminder that the installation of this pipe will be not only for the benefit of the present generation but for many more to follow.

U. S. cast iron pipe, centrifugally cast in metal molds, retains the good characteristics of the older type of pipe and incorporates the superior properties of strength and uniformity imparted by this modern casting process and quality controls.

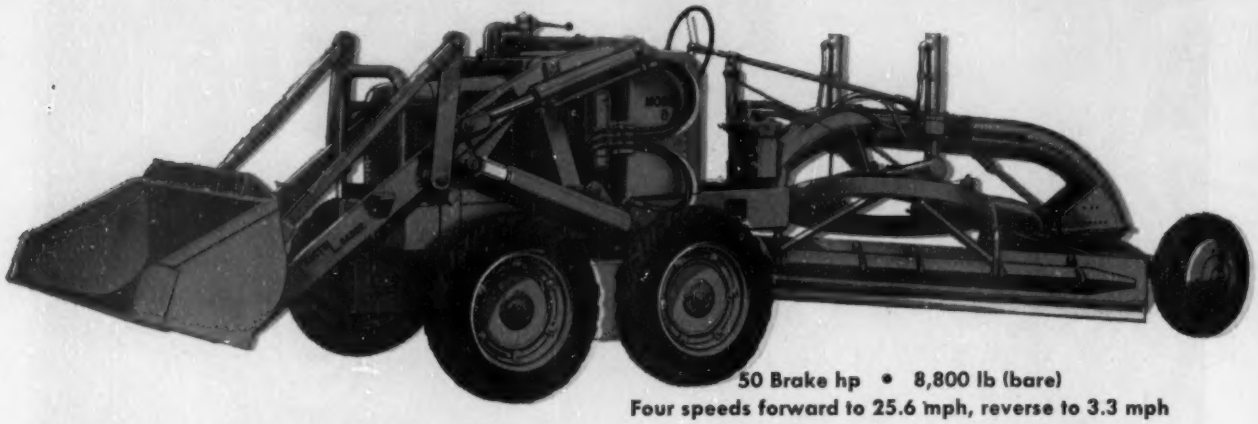
We are well equipped to furnish your requirements for cast iron pipe and fittings made in accordance with American Standard, American Water Works Association and Federal specifications. U. S. pipe centrifugally cast in metal molds is available in sizes 2- to 24-inch and pit cast pipe in the larger sizes.

U.S. cast iron PIPE

FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

United States Pipe and Foundry Co.,
General Office, 3300 First Ave., N. • Birmingham 2, Ala.
Plants and Sales Offices Throughout the U. S. A.

Dozens of Uses • Thousands of Users
Prove Ability, Versatility of the Model D



50 Brake hp • 8,800 lb (bare)
Four speeds forward to 25.6 mph, reverse to 3.3 mph

The thousands of satisfied owners are still finding new uses for the able and versatile Allis-Chalmers Model D Grader. It has proved again and again that it has the power and capacity to do outstanding work on both construction and maintenance.

Usefulness of the Model D is multiplied by several easily mounted attachments: hydraulically controlled rear-end loader, shoulder maintainer that is interchangeable with the loader, scarifier, both V-type and blade snowplows.

MORE POWER, NEW FEATURES, LOW COST

For even greater performance ability, power for the Model D has been boosted to 50 brake hp. Also, leaning front wheels and power circle turn now are available (optional). With these and other big-grader features such as tandem drive, ROLL-AWAY Moldboard, tubular frame and hydraulic blade lift — the Model D's original cost still is but one-third that of a large grader. Operating costs are low, too.

Your Allis-Chalmers dealer will be glad to demonstrate what the versatile, economical Model D can do for you.

ROLL-AWAY is an Allis-Chalmers trademark.

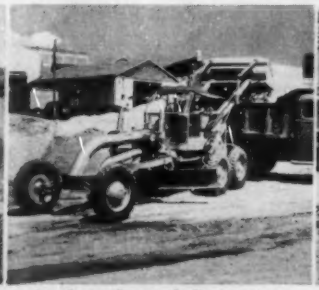
ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

...for contractors

Finish grades between forms on road and street construction.

Levels for home building, parking lots, play areas, etc.

Terraces, builds diversion ditches, does miscellaneous grader work.



Loads sand, gravel, dirt, any material, with ⅝-yd. bucket.

Rough grades, spreads and cleans up on street or road construction.

Landscapes, grades lawns, slopes, ditches around housing projects.

...for county and state highway departments

Scarifies with plenty of down pressure, accurate hydraulic control.

Mixes thoroughly, with rolling action of ROLL-AWAY moldboard.

Cuts and cleans ditches, slopes banks, grades shoulders.

Reshapes and maintains shoulders with rear-mounted attachment.

Loads sand, dirt, snow—any material — to trucks.

Keeps roads in shape the year-round — clears snow in winter.

...for cities towns and townships

Maintains streets and alleys, park drives, playgrounds.

Handles light construction on streets, roadways, etc.

Backfills ditches, packs and levels ground, loads excess dirt to trucks.

Removes weeds from street sides and alleys, loads or hauls away.

Windrows snow with blade, or plows with V or blade plow.

Loads snow from gutters, maintains stockpiles, handles bulk materials.

...and others

Builds and maintains access roads for quarries, cemeteries, etc.

Clears and loads snow at quarries, storage yards, parking areas.

Grades, handles bulk materials around industrial plants.

from this... | to this...

by CENTRILINE

Low water pressure due to friction loss can be permanently corrected by Centrilining. Properly applied cement-mortar linings in pipelines eliminate interior tuberculation and corrosion forever. The continuous rigid surface also prevents leakage from joints or holes in the pipe wall. And it's all done with the pipes in place. The result is the equivalent of a new pipeline at a fraction of the cost of new pipe.

Write today for free booklet!

CEMENT-MORTAR LININGS FOR PIPES IN PLACE

VISIT CENTRILINE AT BOOTH 37-38
A.W.W.A. CONVENTION • SEATTLE, MAY 23-28

CENTRILINE CORPORATION
A subsidiary of Raymond Concrete Pile Co.
140 CEDAR STREET, NEW YORK 6, N. Y.
Branch Offices in Principal Cities of United States and Latin America

WHY BUY SEWER CLEANING EQUIPMENT

- We will lend you equipment to maintain your sewers, at a charge generally less than the cost of your equipment upkeep.
- A completely equipped sewer department at your disposal, when you want it, with no equipment or supervisional problems.
- It is economical, and good business, to eliminate sewer trouble, by preventive cleaning.

Thomas Drain Service
Home Office - 35 S. College St., Akron 8, Ohio
Collect Phone Calls Accepted
Call BLackstone 2212 Akron, Ohio

More Literature

Write directly to the manufacturers or use coupon on page 31

Water Storage

294 Steel water reservoirs and standpipes in any capacity are engineered, fabricated, and erected by GRAVER TANK & MFG. CO., INC., EAST CHICAGO, IND. They are designed to provide effective, low-cost water storage for your community's distribution system. Write for literature.

Small Transit for Surveying

295 A small, easy-to-handle transit that equals and ofttimes surpasses the accuracy of ordinary transits, is introduced by HENRY WILD SURVEYING INSTRUMENTS SUPPLY CO. of AMERICA, INC., MAIN and COVERT STS., PORT WASHINGTON, N. Y. Ideal for large and small surveying jobs under the roughest field conditions, the Wild T-1 Optical Repeating Transit features an optical micrometer that eliminates reading errors. Illumination is provided by daylight mirror or, at night, by battery attachment. Write for *Booklet AC-3*.

Three Years Service with Plastic Markers

296 Plastic markers for pavements and crosswalks have improved in quality and performance, and are of increasing practical interest to traffic officials. An installation of Safety Traffic Markers on a busy street in New Orleans made three years ago, is reported to look almost as good as new. They are neither spiked nor embedded, but cemented to the street by a special mastic. For a 4-page, illustrated folder giving details, write SAFETY TRAFFIC MARKER CO., INC., 826 UNION ST., NEW ORLEANS, LA.

Mechanical-Joint Gate Valves

297 The mechanical-joint gate valves offered by this company are designed to fit the cast-iron pipe in a community's water-works system. Two men with a ratchet wrench can install the valve in minutes. The "bottle-tight" joints avoid lead, jute or caulking, and are available in a wide range of sizes, each conforming to A.W.W.A. specifications. IOWA VALVE CO., 201-299 N. TALMAN AVE., CHICAGO 80, ILL., will send complete information.

Easier Way to Install Underground Pipe

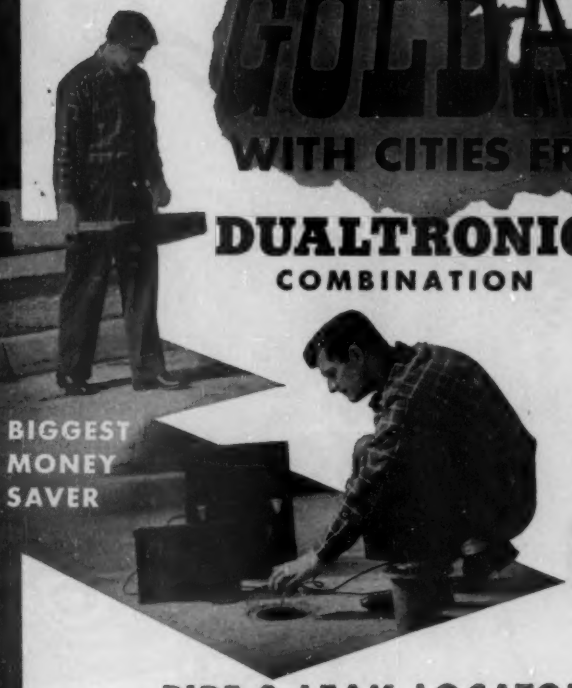
298 A good way to install water and sewer pipe underground without cutting pavement, trenching or backfilling, is to use the new Hydrauger earth-boring tool with 2- to 24-in. bits and reamers. A complete description of this "open hole" method of pipe installation is available from the HYDRAUGER CORP. LTD., 681 MARKET ST., SAN FRANCISCO, CALIF.

Joins Pipe Faster

299 Use this compression coupling on cast-iron, steel and asbestos-cement pipe—threaded or mechanical joint—and you are assured a fast, permanent installation. Only one man equipped with a single tool is needed to join pipe with the Morris coupling. Its band-type construction holds the entire surface of each joint in uniform compression. Write MORRIS COUPLING AND CLAMP CO., P. O. BOX 632, ELLWOOD CITY, PA.

GOLDAK LOCATING EQUIPMENT IS FIRST CHOICE WITH CITIES FROM COAST TO COAST

DUALTRONIC COMBINATION



PIPE & LEAK LOCATOR

The "Dualtronic" is acclaimed by Municipalities and Utilities throughout the Country because of the time and labor savings effected by one instrument doing the work of two, so efficiently and effectively. Ruggedly built! Lightweight! One man operation!

GIANT in Action

FEATHERWEIGHT MODEL 87

PIPE LOCATOR

Pinpoint location of pipes, mains, gates, tees, etc. One man operation, weighs 11 lbs.! Strong, positive location signal guaranteed by Licensed Circuits and MICRO-TUNING, exclusive with Goldak.

DON'T GUESS..KNOW

MODEL L46

SENIOR LEAK LOCATOR

Detect costly leaks in water and low viscosity fuel lines, in their exact position. Completely portable, simple to operate. Latest electronic improvements and high quality parts assures unequalled performance. Guaranteed by Goldak.

ONE MAN OPERATION

MODEL 620

BOX & VALVE LOCATOR

Pin Point Detection of Goldak's Model 620 saves you time and money with immediate location of Buffalo Boxes, Valves, Covers and Buried Metals. Sturdily constructed, all-weather use.

you get PPD* with Goldak Locators

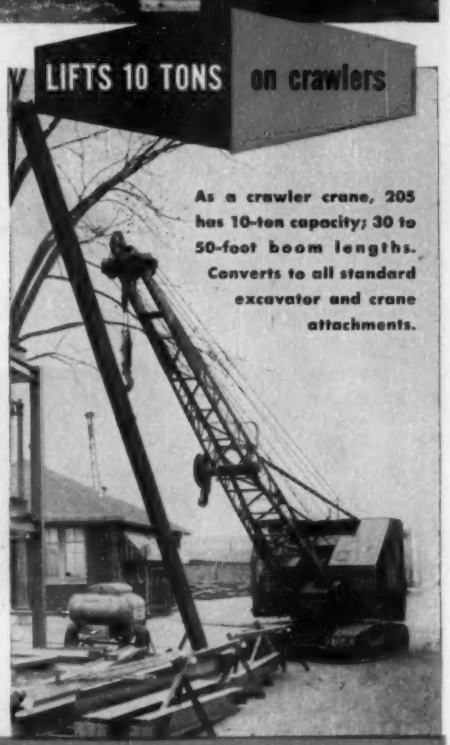
* PIN POINT DETECTION

The GOLDAK Company
Leading Makers of PIPE LOCATORS Since 1933

WRITE FOR FREE LITERATURE AND NAME OF NEAREST DEALER

1544 WEST GLENOAKS BLVD. • GLENDALE 1, CALIF.

NEW Koehring 205 Truck Crane gives you lowest price per pound of lifting capacity. Its maximum 15-ton lift (on 25-ft. boom) offers a big *plus* in work capacity over other machines in the "½-yard" class. Remember, lift capacity is WORK CAPACITY. The 205's extra lift capacity increases its work capacity with all attachments. As a clamshell or dragline, it handles ½ to ¾-yard buckets on a wide work range. As a heavy-duty ½-yard shovel or hoe, its extra strength and powerful cable crowd increase production and speed of operation.


LIFTS 10 TONS on crawlers
As a crawler crane, 205 has 10-ton capacity; 30 to 50-foot boom lengths. Converts to all standard excavator and crane attachments.

CHECK THESE OTHER 205 ADVANTAGES:

- 32½ m.p.h. travel speeds on rubber-tired truck mounting.
- Only 2 major shafts in upper machinery — simple, accessible.
- Big 20-inch clutches, self-adjusting.
- 4 hook-rollers, eccentric adjustment.
- Antifriction power flow for dig, lift, swing, and travel.
- On standard or extra-long crawlers, 16, 20, or 24-inch shoes.
- Automatic crawler traction-brakes.
- Independent traction optional.

K484 AC

Get the complete story in new 205 bulletin. Ask your Koehring distributor for your copy . . . or write us:

KOEHRING COMPANY, Milwaukee 16, Wis.

NAME _____ TITLE _____

DIVISION _____

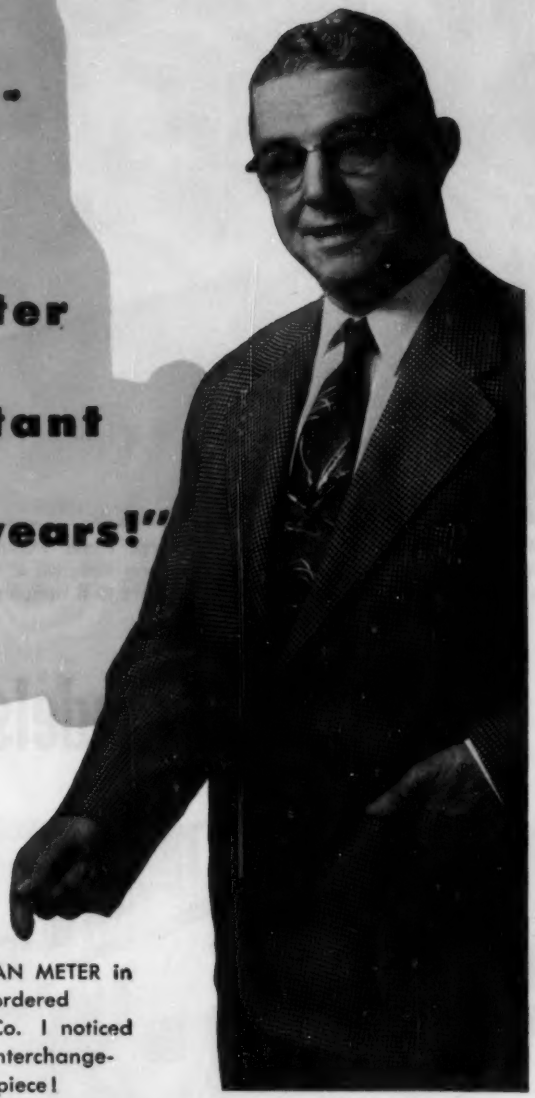
STREET _____

CITY _____ STATE _____

KOEHRING

Subsidiaries: PARSONS · JOHNSON · KWIK-MIX

"Here's why interchange-ability of American Meter parts is so important to us through the years!"



"Full interchangeability of parts is a must when we consider buying water meters. It means the difference between quick, simple repair jobs and lengthy, expensive servicing. During the last year we replaced worn parts of an AMERICAN METER in operation for thirty years with new parts ordered from the Buffalo Meter Co. I noticed how these parts were interchange-able piece for piece!

"Once we found how easy it is to keep these meters in service, we started replacing all our meters with AMERICAN. We've had hardly any meter problems since!"

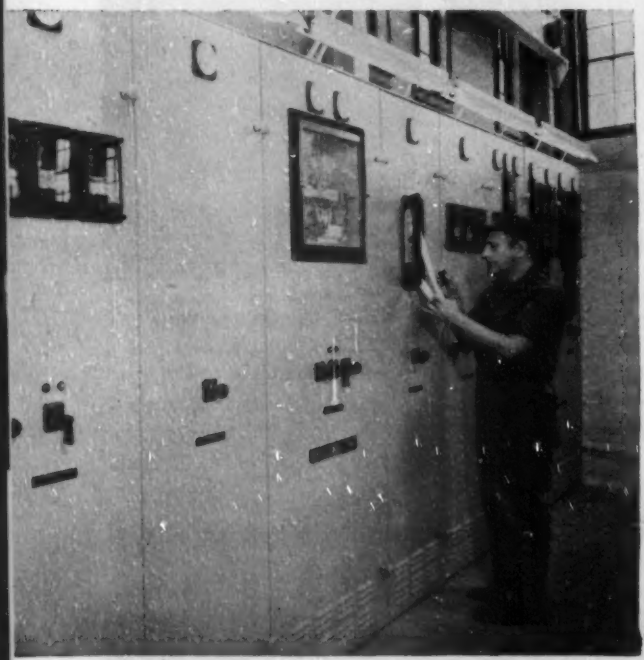
• Write today for full information about reliable AMERICAN METERS.

BUFFALO METER CO.

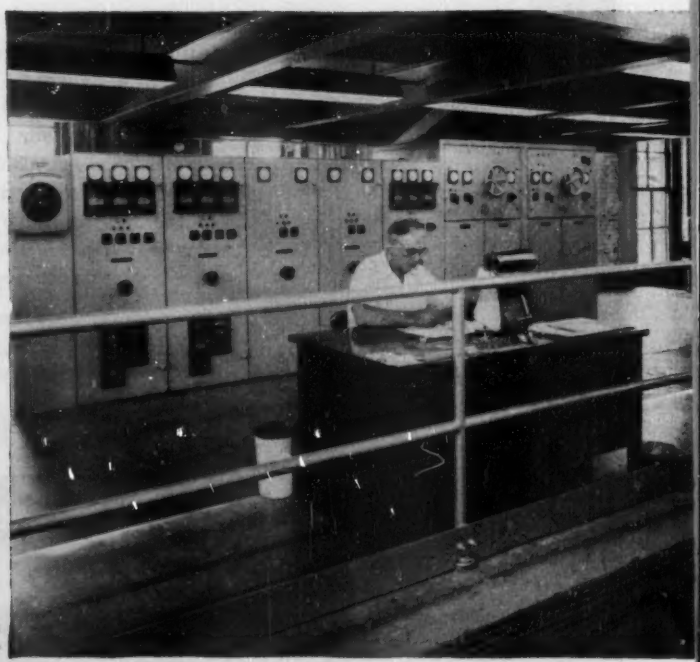
2902 Main Street Buffalo 14, N. Y.

USING THE SAME BUILDING at the George Reyer Pumping Station, Chester Engineers and G-E engineers designed a new system, composed of modern pumps and efficient G-E equipment, to replace the old steam-driven machinery. Result: water-pumping capacity has gone from 40 to 100 mgd with lower operating costs and more efficient personnel utilization.

Nashville remodels pumping plant, installs



ADEQUATE PROTECTION and simple control of all pump motors is provided by this compact 4160-volt G-E metal-clad switchgear located in a convenient corner of the plant.



CENTRAL CONTROL for G-E synchronous motors and 600- and 900-hp wound-rotor induction motors is provided by this G-E main control panel. Seated at his desk is control-panel operator Louis Gerard.

PROJECT CO-ORDINATION helped insure "on time" completion of this job. G-E Sales Engineer W. Crockett, Jr. is shown here reviewing progress with Robt. L. Lawrence, Jr. (right), Director and Chief Engineer, Water Works Dept. of Nashville.

G-E equipment to double its water supply

Engineered electric system replaces former steam drives, adding 60 mgd to give city many years of abundant water

Unexpected industrial growth and a parallel increase in population made it necessary for city officials of Nashville, Tennessee, to plan for additional water supply. Their foresight was the moving force in planning an installation which would be more than adequate for at least 20 years.

To put their plan into action they called in the Chester Engineers, consultants, of Pittsburgh, Pa. General Electric application engineers, working closely with the city's consultants, helped plan the complete program. The G-E team made sure that manufacture and delivery of the electrical equipment was co-ordinated with the installation schedule of Burford, Hall & Smith mechanical contractors, of Atlanta. This project co-ordination helped speed job completion. Finally, G-E Service Engineers were on hand to help train operating personnel.

The high efficiency of the new installation, compared to the former steam-driven equipment, has enabled Nashville to obtain 100 mgd of pumping capacity instead of the previous 40 mgd, with the same space facilities and lower operating costs. If *you* are considering a water supply program for your city, contact your local G-E Apparatus Sales Representative early in your planning, when his help can save you most.

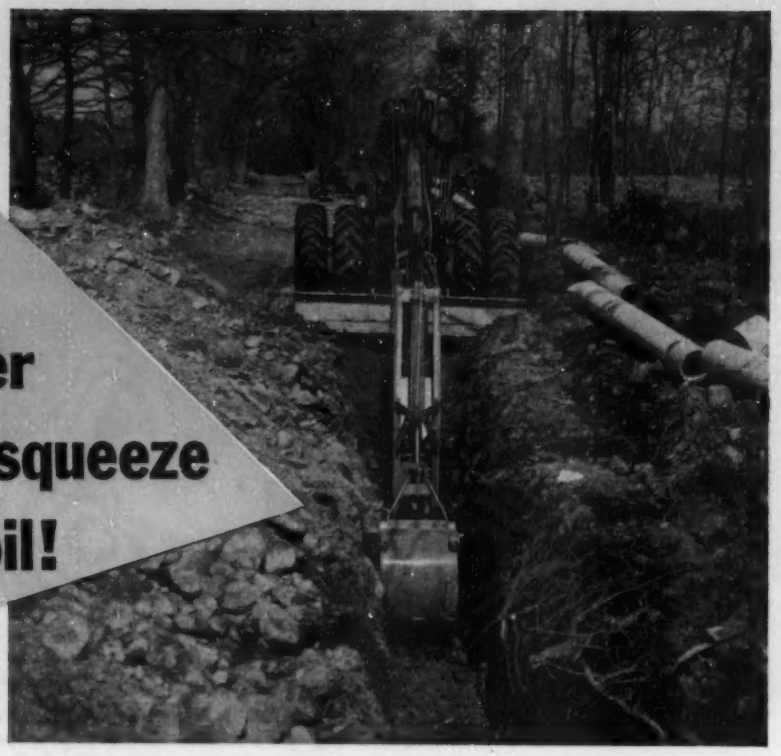
GET YOUR CITY INTERESTED IN ITS WATER SUPPLY

Show our full-color movie "Pipeline to the Clouds." It's part of G.E.'s "More Power to America" Water Supply Program. Write for Bulletin GEA-5555 to General Electric Company, Section 666-84, Schenectady 5, N. Y.

Engineered Electrical Systems for Waterworks

GENERAL ELECTRIC

Hydro-Trencher puts the squeeze on tough soil!



Working in conditions like this won't slow down the Oliver 88WT Hydro-Trencher. It digs through rocky soil, roots or hard clay fast and clean. Hydraulic down pressure does all the work. The bucket is *forced* full in the toughest going. Two completely separate hydraulic circuits keep pressure on every maneuver, even when you perform two operations at once. You've got working power all the way—to speed your work, to boost your production.

A one-man rig, the 88WT is ready to work or move in a moment. Its half-yard capacity and rubber-tired mobility cut hours and dollars from any job. Its compact design and delicate hydraulic control let you work next to pipes, walls, foundations, without fear of damage. The rugged, hydraulic stabilizer blade holds the unit level and steady, and also doubles as a backfiller blade. And here's a bonus feature, turn the trenching bucket around, in minutes you have a swing loader with all the power features of the trencher.

For more profit, put the squeeze on your trenching or loading operations with the Oliver 88WT Hydro-Trencher. Visit your Oliver Industrial Distributor for a demonstration.

OPERATING FEATURES
OLIVER 88WT HYDRO-TRENCHER AND SWING LOADER COMBINATION

- **One-half yard bucket**
- **Digs to 10 feet (12 feet with optional boom cylinder)**
- **Loads to 10½ feet (12 feet with optional loading bucket)**
- **200° boom swing**

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois

a complete line of industrial wheel and crawler tractors

But the INTERNATIONAL word for water is LAYNE

Conquering all barriers of space, language and time, Layne service and Layne equipment is known and respected wherever man has need for water. And that need is universal.

Long years ago, a man named Layne with a one man muscle power rig drilled a hole in arid land—then known as Dakota Territory—and the first Layne well went into service. Through the years between, an idea has grown into a service that knows no boundaries and Layne & Bowler, Inc. are today the world's largest developers of ground water resources.

The "know how" that has accumulated in that nearly three quarters of a century is today available to industry, agriculture and municipality. Focused on specific problems through trained engineers and technicians, it is a unique service that includes exploration . . . drilling . . . modernization . . . maintenance and installation of Layne equipment.

From the largest industrial and municipal projects to the small farmer concerned with an irrigation system, that knowledge is available without cost or obligation.

On any problem that relates to water it is wise to first consult Layne & Bowler, Inc. either directly or through an associated Layne company.

Layne

LAYNE & BOWLER, INC.

General Offices, Memphis 8, Tenn.

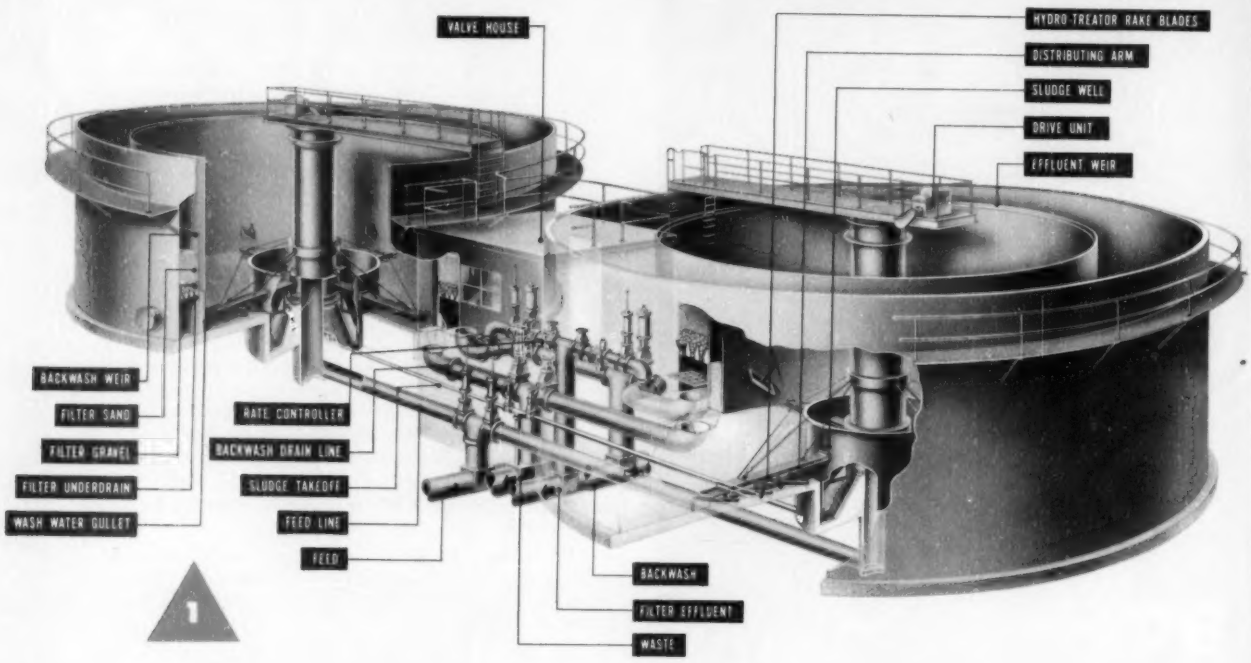
Layne Associate Companies Throughout the World

An informative booklet "Bulletin No. 100" will be sent free upon request.

3 New DORR Developments

FOR MUNICIPAL AND INDUSTRIAL SANITATION...

These three new Dorr developments are now commercially available to help in the solving of community or industrial sanitation problems. For descriptive Bulletins about this equipment, just return the coupon.



The Dorrco Aldrich PeriFilter System Cuts Filtration Plant Construction Costs up to 40%!

A unique design permits installation of a Dorr pre-treatment mechanism and an annular rapid sand filter in the same welded steel tank... valves and piping are greatly simplified . . . reduced head losses and simple operation add up to lower operating costs. Illustration shows two PeriFilters manifolded together to operate in parallel and with Dorrco Hydro-Treators installed for pre-treatment.

Better tools TODAY to meet tomorrow's demand

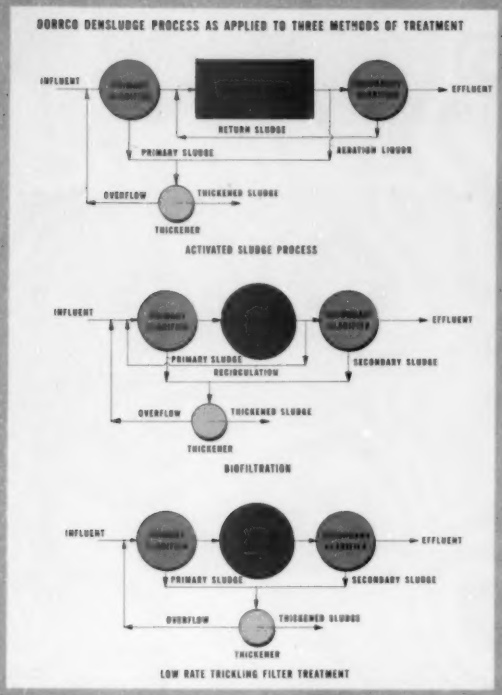
DORRCO

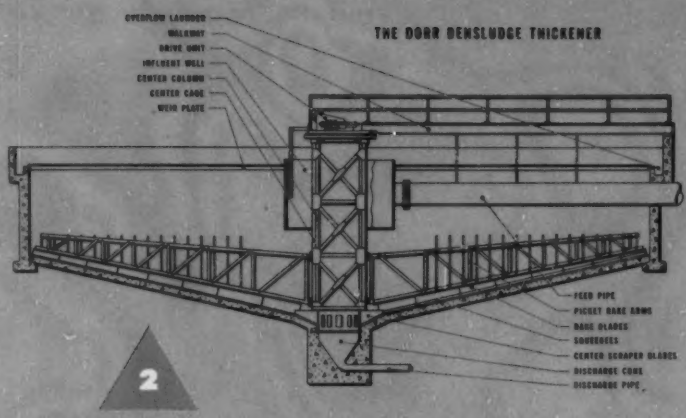
DORR

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.

Associated Companies and Representatives in the principal cities of the world

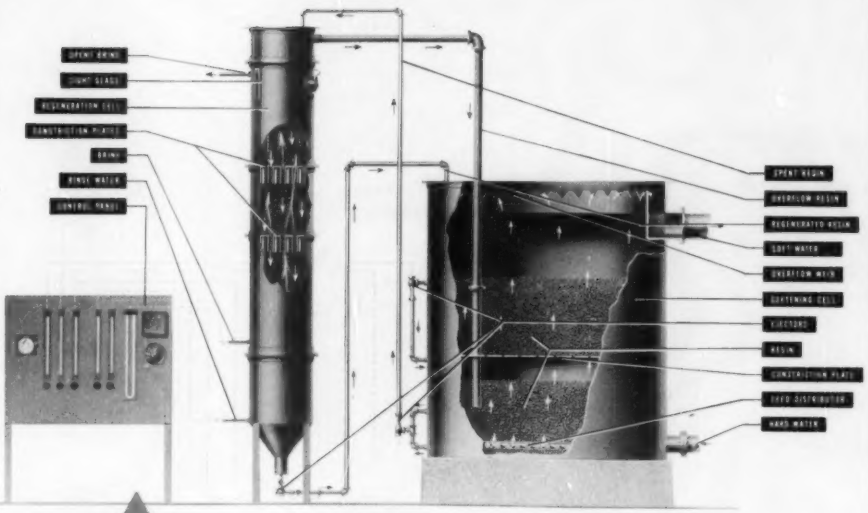




2

The Dorrco Densludge Process Reduces Sewage Sludge Volume up to 50%!

Clarification and thickening are carried out separately so that maximum efficiency is realized in each operation. Dorr Densludge Thickener produces a concentrated sludge greatly reduced in volume which cuts digester requirements, sludge drying bed area and other sludge handling facilities. Process is equally adaptable to new and existing plants employing primary, activated sludge, Biofiltration or low-rate filter flow-sheets.



3 THE DORRCO HYDRO-SOFTENER

The Dorrco Hydro-Softener Continuously Softens Water Supplies by Base Exchange Resins!

For the first time, base or cation exchange softening can be put on a continuous basis. Installed cost is lower than with a conventional batch exchanger, and greater brine and rinse efficiency result in lower operating costs. The Hydro-Softener produces a continuous supply of softened water at a constant quality.

FIFTY YEARS 1904–1954

For information about these new tools and new processes, return the coupon to THE DORR COMPANY, Stamford, Conn. In Canada: 26 St. Clair Avenue, E., Toronto 5.

THE DORR COMPANY
Stamford, Connecticut

Yes, I'm interested in these new developments.
Please send me more information on the items checked . . .

- ☐ THE DORRCO ALDRICH PERIFILTER SYSTEM
- ☐ THE DORRCO DENSLUDGE PROCESS
- ☐ THE DORRCO HYDRO-SOFTENER

Name .....

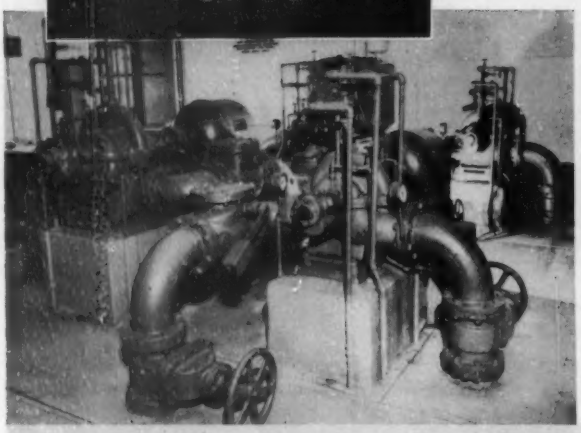
Title or Occupation .....

Street .....

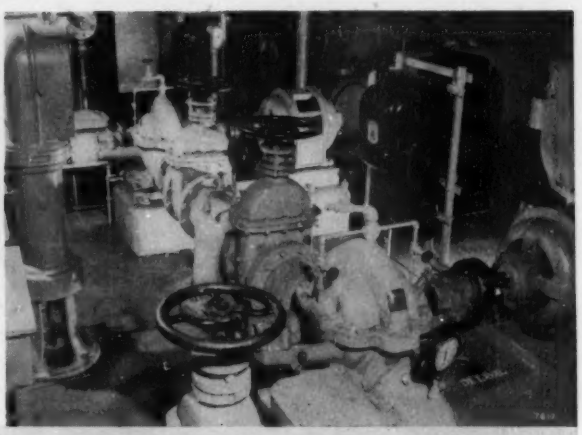
City ..... P.O. Zone .... State .....

DE LAVAL
CENTRIFUGAL
PUMPS

do a big job on the Jersey shore



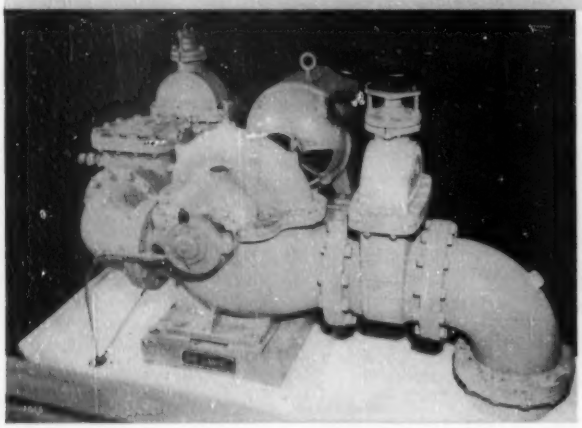
VENTNOR, N. J. These four De Laval Centrifugal Pumps are putting out 4,500 gpm and holding 46 lbs pressure over a 24-hour period. Installed in 1947 and 1948, they're still in the "infancy" of a long life of service.

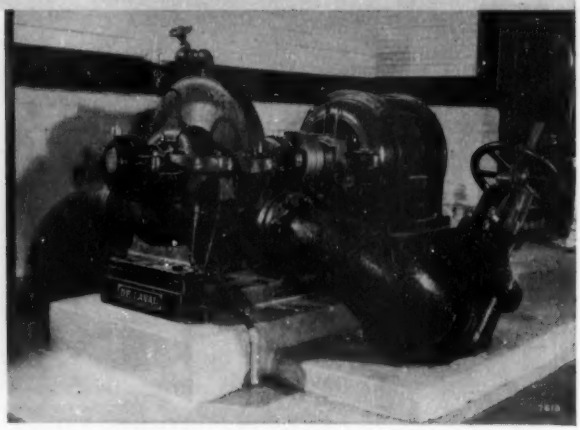


MARGATE, N. J. This De Laval pump actually delivers 35% more than its rated capacity at peak demand periods. It is used as a booster from the reservoir to a 95-foot standpipe at sea level, to maintain a 40 lb plant pressure.

OCEAN CITY, N. J. The No. 2 and No. 3 De Laval pumps pictured here meet—with impressive ease—a 3,600,000 gallon per day water requirement at the main Tenth Street pumping station at 46 lbs pressure. No. 1, not shown, is a million-gallon De Laval unit installed in 1950.

WILDWOOD, N. J. In use since 1938, this 1,040 gpm De Laval pump, with a head of 138 feet, maintains a constant level in the tank for continuous supply into the mains at 45 lbs pressure. The reservoir for this plant has a total capacity of 5,200,000 gallons.





ON THE JERSEY SHORE as in just about every other part of the country, De Laval pumps play a big part in meeting the ever increasing water requirements of growing communities. De Laval's lower capacity units, ranging from 100 thousand gallons per day, offer the same, rugged durability as their big brothers rated at 100 million gallons per day and up. Ask your De Laval representative for complete data.

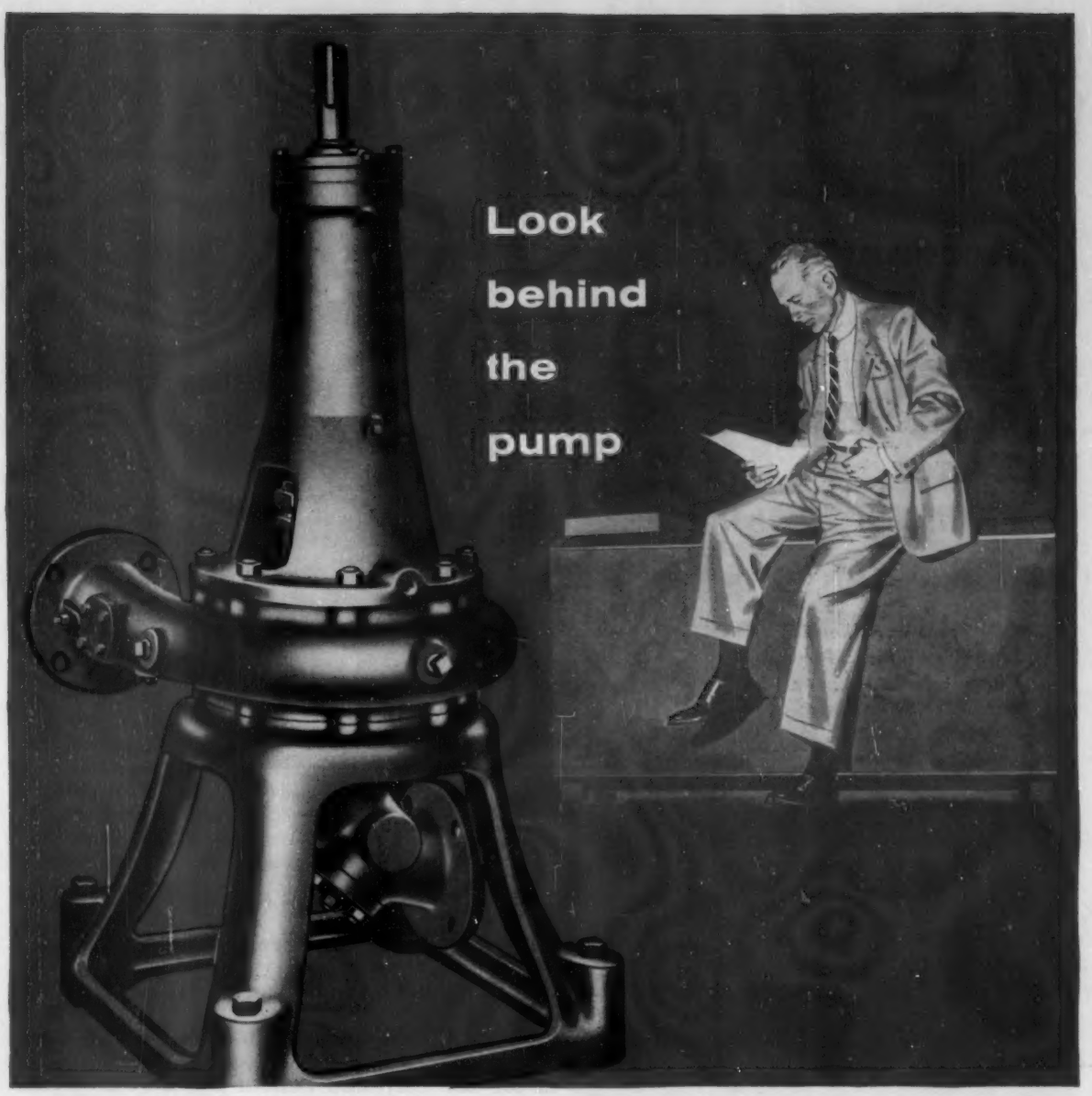
See us IN BOOTH 58 at the show in Seattle

DE LAVAL *Centrifugal Pumps*

DE LAVAL STEAM TURBINE COMPANY

866 Nottingham Way, Trenton 2, New Jersey

DL 231



How much for maintenance?

In figuring the cost of a trash pump, what do you allow for maintenance . . . how much to clear out the trash that clogs the impeller? Will it be daily? Every other day? Weekly?

Or figure it this way. What price a pump that won't clog . . . that will virtually eliminate maintenance? That's why you should figure the Fairbanks-Morse Bladeless Impeller Pump! Its unique whirling tube won't clog . . . there are no blades or projections to catch and hold trash.

This is just one more example of the quality that is Fairbanks-Morse . . . in design, materials, workmanship, a standard of quality that gives you more for your pump dollar. For pump performance you can depend on, rely on the world's largest manufacturer of a complete pump line. See your Fairbanks-Morse Branch or write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

FAIRBANKS-MORSE

a name worth remembering when you want the best

PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • FARM MACHINERY • MAGNETOS

Underwood Sundstrand

Accounting Machines

Extend Grand Rapids Taxes

City Treasurer Charles Lawyer with Mrs. Mary Flipse who operates one of the three Underwood Sundstrand accounting machines.

Three Underwood Sundstrand accounting machines are used by the City Assessor's Office and the City Treasurer's Office twice yearly *solely* for extending taxes on both Tax Rolls and Tax Bills simultaneously. The work is completed in the necessary 20 days. The first tax job is for the City and School tax levy collected during December. The 10-key simplicity and speed of the Underwood Sundstrand machines, their ability to automatically multiply valuation by tax rate, the accuracy and neatness of the Rolls and Tax Bills, resulted also in very substantial savings made each year.

Underwood Offices are ever on the alert to help municipalities do their accounting, figuring and typing work more efficiently with the latest Underwood machines. Call your Underwood Representative today.

UNDERWOOD CORPORATION

Accounting Machines . . . Typewriters . . . Adding Machines . . . Ribbons, Carbon Papers and other Supplies

One Park Avenue UNDERWOOD **New York 16, N. Y.**

Sales and Service Everywhere

THE GENERAL TIRE *and "MUNICIPAL SIGN" introduce the NEW* **SY-LOY**

Plastic Traffic Signs that are really Break-Proof

You save money on SY-LOY — Look at these features:

- *Rustproof*
- *Lightweight*
- *Weather and Age-proof*
- *Plain or Reflectorized*
- *No Maintenance*
- *No Repainting*
- *Lifetime Durability*
- *Built-in Color*

After more than two years of intensive research, The General Tire and Rubber Co. and Municipal Street Sign Co., Inc. jointly introduce SY-LOY, the miracle plastic. SY-LOY signs are sold and guaranteed by "MUNICIPAL," manufacturer since 1922 of the finest street name and traffic signs. "MUNICIPAL," leader as always in economy, durability and beauty, pledges to continually provide the Streets and Highways of America with the latest proven advances in Street Name and Traffic Signs.

"MUNICIPAL" EXCLUSIVELY

The New White on Red 24" x 24" Stop Sign Fully Reflectorized

Only $5.85 each 26 or more

FREE TRIAL! Because SY-LOY is new you must see it —test it—use it to really know its value.

We're so sure SY-LOY signs are the solution to your traffic sign headaches that we're willing to pay the freight on your first order. If you don't agree that SY-LOY signs are the signs of tomorrow—today, return them—also at our expense. We know though that you'll use and specify SY-LOY, the signs that last a lifetime!

For complete details mail coupon or circle No. 825 on postcard on colored insert in purchasing news section.

BRIEF SPECIFICATIONS

SY-LOY traffic signs are reinforced with rugged fiberglas, fused under intense heat and pressure with the finest weather and age resistant polyester resins and pigments.

- **All standard legends and sizes.**
- **Flexible—always return to original shape.**
- **Available plain or reflectorized.**

MUNICIPAL

STREET SIGN CO., Inc.

777-9 Meeker Ave., Brooklyn 22, N. Y.

SIGNS THAT LAST A LIFETIME!

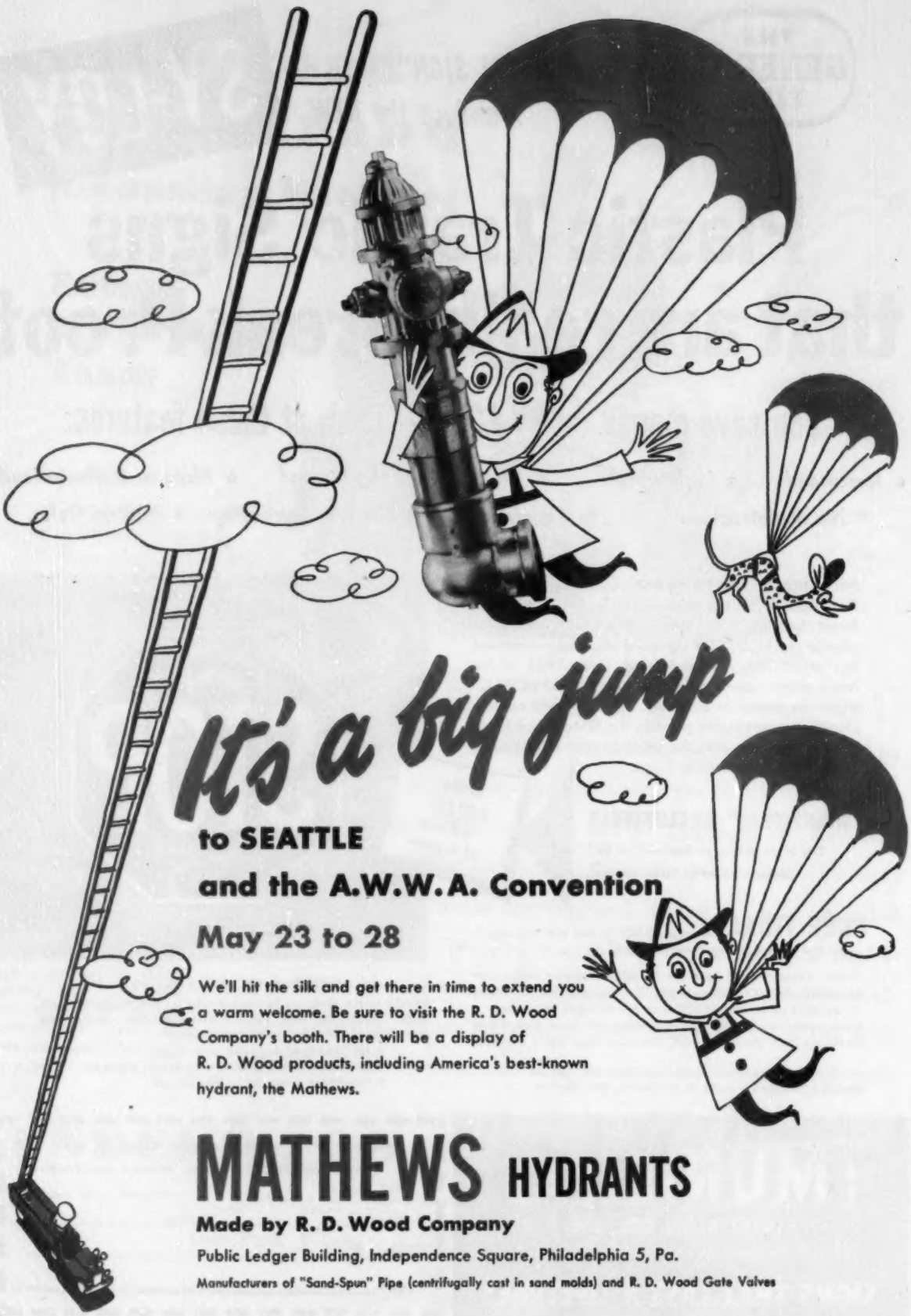
"MUNICIPAL" 777-9 Meeker Ave. Bklyn 22, N. Y.

Please send SY-LOY brochure, technical specifications and price list.

NAME_____ TITLE_____

ADDRESS_____

CITY_____



It's a big jump

to SEATTLE

and the A.W.W.A. Convention

May 23 to 28

We'll hit the silk and get there in time to extend you a warm welcome. Be sure to visit the R. D. Wood Company's booth. There will be a display of R. D. Wood products, including America's best-known hydrant, the Mathews.

MATHEWS HYDRANTS

Made by R. D. Wood Company

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

standardize on MUELLER®

"B" Tapping and Inserting Machine
Drills and taps mains and inserts corporation stops, ¾" to 1", under pressure . . . also used for dry taps, ¾" to 2½" . . . similar machines available in larger sizes.

"C-1" Drilling Machine
Makes cuts 2" to 12" in any size main . . . dry or under pressure . . . power-operated by air motor or gasoline engine . . . hand-operated model also available.

a complete line of water works equipment

Low maintenance and high efficiency are characteristic of all Mueller water works equipment, supplies and specialities. Each item is engineered to do its specific job and is manufactured from the finest of materials — guaranteeing long, trouble-free life. A high degree of standardizability and interchangeability requires a minimum inventory of replacement parts in case of accident or emergency. Mueller's complete line of products, a few of which are shown, provides a single source for your water works needs. All products are fully tested and warranted.

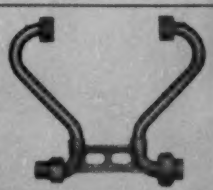
Corporation Stops
Designed for insertion into mains under pressure . . . ground key . . . wide range of sizes and types . . . variety of inlet and outlet threads and connections.

Service Clamps
For use on all types of pipe . . . single or double strap . . . full depth tapped hole . . . Neoprene or lead ring gasket . . . all sizes and threads available.

Curb Boxes
Telescoping type . . . prevents damage to stop or piping . . . large steel upper section will not revolve in base. Bronze-to-iron threads for easy plug or lid removal . . . with or without stationary rod.

Curb Stops
Ground key stops . . . proper taper prevents sticking . . . allows easy operation . . . inverted key or solid tee head type . . . wide range of sizes and connections.

Meter Setting Equipment
Copper meter yoke with multi-purpose end connection . . . iron meter yokes . . . plain or lock wing angle stops . . . meter couplings . . . complete line available . . . variety of inlets and outlets.



Regulators and Relief Valves
Large diaphragm type . . . all working parts accessible without removing from line . . . high or low pressure . . . for water, air, gas or oil.

Fire Hydrants
Improved and standard types, sizes to 6¼" valve opening . . . compression type . . . locked-in nozzles . . . safety flange minimizes collision damage . . . 2½" size and flush type also available . . . AWWA.

Gate Valves
Exclusive "four-point contact" disc wedging mechanism . . . fully bronze-mounted . . . conventional or "O" ring stem packing . . . rising or non-rising stem . . . AWWA.

Inserting Valves
Designed for installing in line without a shutdown . . . operated like gate valve after installation . . . parts interchangeable with AWWA gate valve . . . 4", 6" and 8" sizes.

See our complete line of water works material and equipment in Booths 118-119 at the A.W.W.A. Convention in Seattle.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

CONSTRUCTION CASTINGS

for **Highway • Municipal • Building**
Industrial • Communication
Public Works • Airport
Utilities • Transportation

Patterns for 15,000 different Gray Iron Castings used on Construction Projects.

Write for our 135-page
Catalog "R," Second Edition

NEENAH FOUNDRY CO.
NEENAH, WISCONSIN

Chicago Office 308 W. Washington St., Chicago, Ill.

FLEXIBLE
EFFICIENT
ECONOMICAL

Traffic control, parking, and parking enforcement are truly *automatic* in the city with Karpark installations. Karpark Twin-O-Matic and Unimatic parking meters, built by Herschede, makers of America's finest clocks, are engineered to be completely *flexible*—to suit your city's requirements for coin combinations and time intervals. They are *efficient*, simple to operate, highly visible, ruggedly built. And Karpark meters are *economical*, provide real savings in enforcement, maintenance and replacement.

KARPARK TWIN-O-MATIC
Times two cars. Reduces maintenance and collection costs. Adjustable to any desired changes.

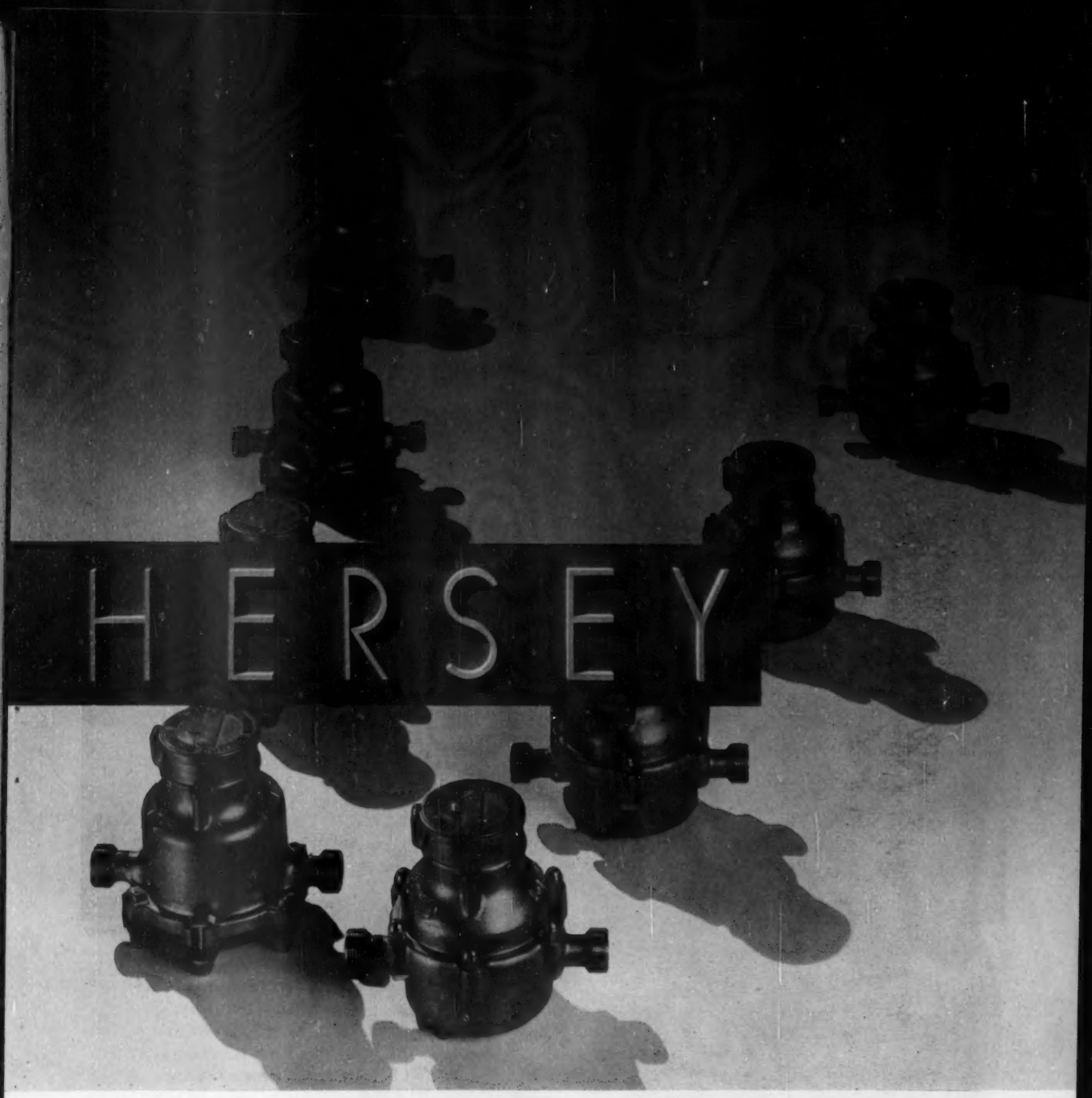
KARPARK UNIMATIC
For single car parking. Can be used for an entire system, or with TWIN-O-MATIC for special locations.

AVAILABLE WITH AUTOMATIC DUMP SYSTEM, SEALABLE BOXES OR OPEN TOP BOXES.

FOR COMPLETE DATA WRITE TO

THE **KARPARK** CORPORATION
Cincinnati 6, Ohio

In Canada
TWIN METER CO. OF CANADA, LTD.
5002 Park Avenue, Montreal 8, Quebec



When it comes to lining up your water meter requirements for the coming year, you are surer and safer with

HERSEY WATER METERS

not only for accuracy in registration but also for economic reasons. More water works officials are standardizing on Hersey Water Meters each year. They know.

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

BRANCH OFFICES: NEW YORK — PORTLAND, ORE. — PHILADELPHIA — ATLANTA — DALLAS — CHICAGO
SAN FRANCISCO — LOS ANGELES

There's no customer

Ewing Galloway

This is Detroit—the Automotive Capital of the World.

Bettmann Archive

Old print showing Detroit about a century ago, from the Canadian side of the river.

MODERNIZED **cast iron**

like an old customer!

DETROIT installed cast iron water mains 116 years ago... and installs them today!

One hundred years ago, Detroit was a city of 40,000. Today it is the Automotive Capital of the World. Today's two million population (estimated) requires over three thousand miles of mains of which 97% are cast iron. Several of these mains are still functioning after a century and more of service. Customers served have increased from 5300 a century ago to nearly 400,000 (city only).

When you have customers with an unbroken record of buying your product for over a century, you naturally prize them. They're scarce in any long-established business or industry. The cast iron pressure pipe industry is proud to have 60 such customers—utilities that have been buying cast iron pipe for water or gas mains for 100 years or more.

Cast iron pipe has been a rugged, long-lived product from the earliest days. Today's *modernized* cast iron pipe, centrifugally cast, is even stronger, tougher, and more uniform in quality. And, where needed and specified, it is centrifugally lined with cement mortar to assure sustained carrying capacity throughout the long life of the pipe.

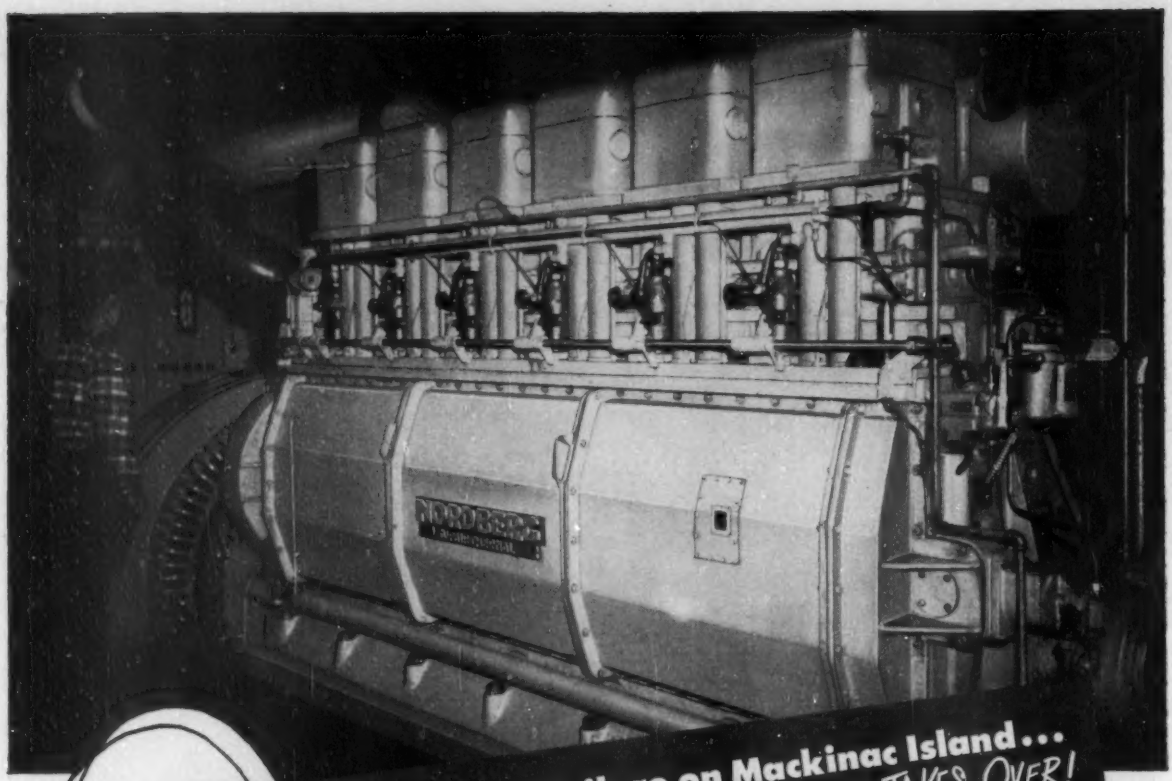
Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Ave., Chicago 3.

CAST Q IRON

The Q-Check stencilled on pipe is the Registered Service Mark of the Cast Iron Pipe Research Association.

One of several cast iron water distribution mains still functioning in Detroit after a century and more of service.

pipe FOR MODERN WATER WORKS OPERATION



Emergency power failure on Mackinac Island... Nordberg SUPAIRTHERMAL Diesel TAKES OVER!

● Electric service reaches Mackinac Island via submarine cable from the Michigan Upper Peninsula. When this cable was damaged recently, main power on the Island was interrupted about eight days, while special equipment was moved in to raise the cable and splice the break. According to the Edison Sault Electric Company, *"If the new Nordberg standby engine had not been immediately available . . it is questionable whether or not service could have been maintained . . ."*

MACKINAC ISLAND, famous northern Michigan resort area, is served by the Edison Sault Electric Company, progressive utility with headquarters in Sault Ste. Marie, Mich. When unusual circumstances caused a temporary main power failure recently, the job of supplying the necessary electric power to Mackinac Island residents was immediately assigned to a new Nordberg 1200 hp *SUPAIRTHERMAL* Diesel Generating Unit.

Installed on Mackinac Island for emergency, as well as "peaking" service during the heavy tourist season, the new 800 kw Nordberg Diesel "took over" the full demand for about eight days, while the primary power line was being repaired. This installation is a good example of Nordberg engines serving the country's utilities, for both standby and main power supply. The next time you have a power problem, think of *Nordberg* . . . builder of America's largest line of heavy duty engines from 10 to over 10,000 hp. *Nordberg Mfg. Co., Milwaukee, Wis.*

NORDBERG

DIESEL • DUAFUEL® AND SPARK-FIRED GAS ENGINES

P254

When you buy HYDRANTS and VALVES for your city waterworks system...

LOOK TO THE YEARS AHEAD, TOO!

EDDY can supply replacement parts for any Eddy Valve or Hydrant ever installed! This is important to you because the Valves and Hydrants you buy today must serve several generations yet unborn. You want no "orphans" in your system. Eddy Hydrants and Eddy Valves are backed by Eddy Valve Company's 104 years of dependable operation—your assurance that replacement parts will be available during the years to come.

EDDY Bronze-Mounted HYDRANTS

are built for dependability and lasting service. They open smoothly *with* the pressure and close without water hammer. One man can easily remove all operating mechanism for inspection and repair. Positive drip action automatically drains the standpipe, safeguarding against freeze-ups. Stem held in place below main valve means no water loss due to a bent stem.

EDDY Bronze-Mounted GATE VALVES

offer simplicity of design, trouble-free operation and enduring service. From the engineering drawing boards through all stages of manufacture, they are step by step a truly "finished" product of workmanship. These factors, added to personal experience, are reasons why progressive water works men have relied on Eddy Valves for years.

Eddy Hydrants and Valves are available with bell, flange or mechanical joint connections to fit any existing or planned installation.

Send today for full information on the complete line of Eddy Valves and Hydrants. No obligation.

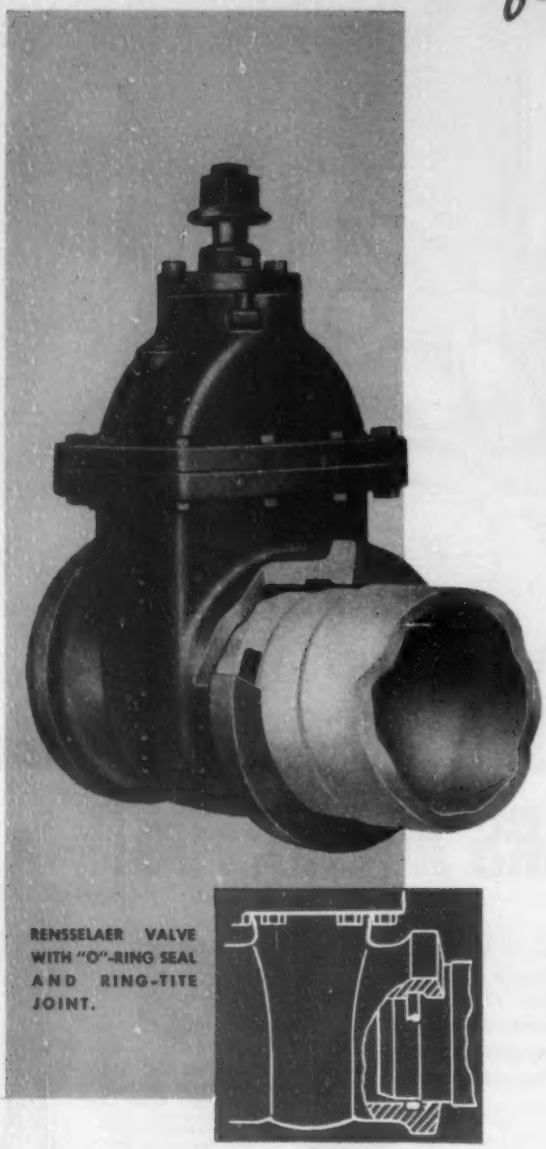
EDDY VALVE COMPANY

A Subsidiary of James B. Clow & Sons

WATERFORD, NEW YORK

Now Ring-Tite Joints

for RENSSELAER VALVES



RENSSELAER VALVE WITH "O"-RING SEAL AND RING-TITE JOINT.

See Rensselaer at Seattle, Booth Nos. 53 and 54

Rensselaer Valve Co. in cooperation with Johns-Manville has adapted Gate Valves and Hydrants to the Ring-Tite Joint, developed by Johns-Manville for Transite Pipe. The first experimental installation of Ring-Tite valves was made in July 1953 at Mattapoisett, Massachusetts.

FAST AND SURE INSTALLATION

Rensselaer Ring-Tite Gate Valves and Fire Hydrants permit quick and simple installation with Transite Pipe. No special fittings are required and labor cost is low. Ring-Tite Bells provide tight, flexible joints.

During assembly, rings are inserted in the grooves, pipe ends are lubricated and the pipe is pulled in — sliding under the rings and slipping along until movement is stopped by shoulders on the pipe. A very simple puller is used and the job is accomplished quickly and with very little effort.

At low pressures, the seal is obtained by radial compression of rubber rings. At higher pressures, rings are wedged in the grooves tighter by the pressure.

Rensselaer Gate Valves with Ring-Tite Ends are available in sizes 4" through 12" for Class 150 Transite Pipe.

RENSSELAER GATE VALVES

Rensselaer Double Disc Parallel Seat Gate Valves are built rugged and simple, designed to give positive seating action and long life and are easy to operate, are made of high quality materials and conform to A.W.W.A. specifications. Rensselaer Gate Valves are available with "O" Ring Seals or standard packing.

Ask for Bulletins B and C.

Rensselaer VALVE CO. TROY, N. Y.

GATE VALVES • FIRE HYDRANTS • SQUARE BOTTOM VALVES • CHECK VALVES • AIR RELEASE VALVES

SALES REPRESENTATIVES IN PRINCIPAL CITIES

112

Check

Are You Using a

COAGULANT

with These Advantages?

1. Coagulation over wide PH ranges, color, turbidity and manganese removal.
2. Rapid floc formation and rapid settling.
3. Increased filter runs.
4. Quality effluent low in iron and aluminum.
5. Excellent taste and odor control.

FERRI-FLOC brings you these superior features and more. It will coagulate waters and wastes over wide pH ranges as well as provide excellent flocculation in softening systems. FERRI-FLOC may be easily and safely handled in any type of standard equipment.

TENNESSEE CORPORATION

Ferri-Floc

TC TENNESSEE CORPORATION

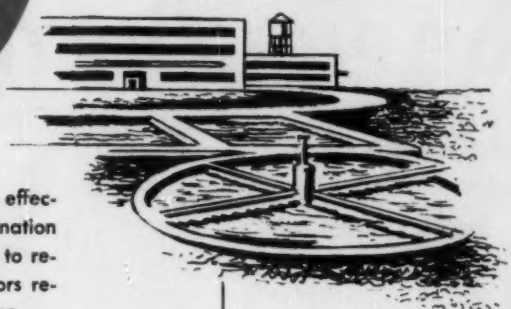
FERRIC SULPHATE

Water Treatment

Coagulation of surface or well waters. Aids taste and odor control. Effective in lime soda-ash softening. Adaptable to treatment of nearly all industrial water or wastes.

Sewage Treatment

Coagulation over wide PH range. Efficient operation regardless of rapid variations of raw sewage. Effective for conditioning the sludge prior to vacuum filtration or drying on sand beds.



SULPHUR-DIOXIDE

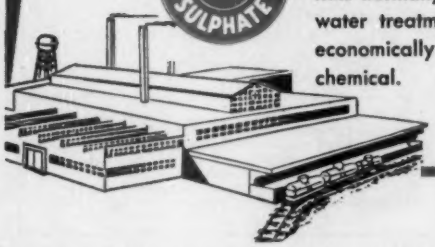
SULPHUR-DIOXIDE HIGHEST QUALITY SO_2

SULPHUR-DIOXIDE is effectively used for dechlorination in water treatment and to remove objectionable odors remaining after purification.

COPPER SULPHATE

COPPER SULPHATE TC

COPPER SULPHATE will control about 90% of the microorganisms normally encountered in water treatment plants more economically than any other chemical.



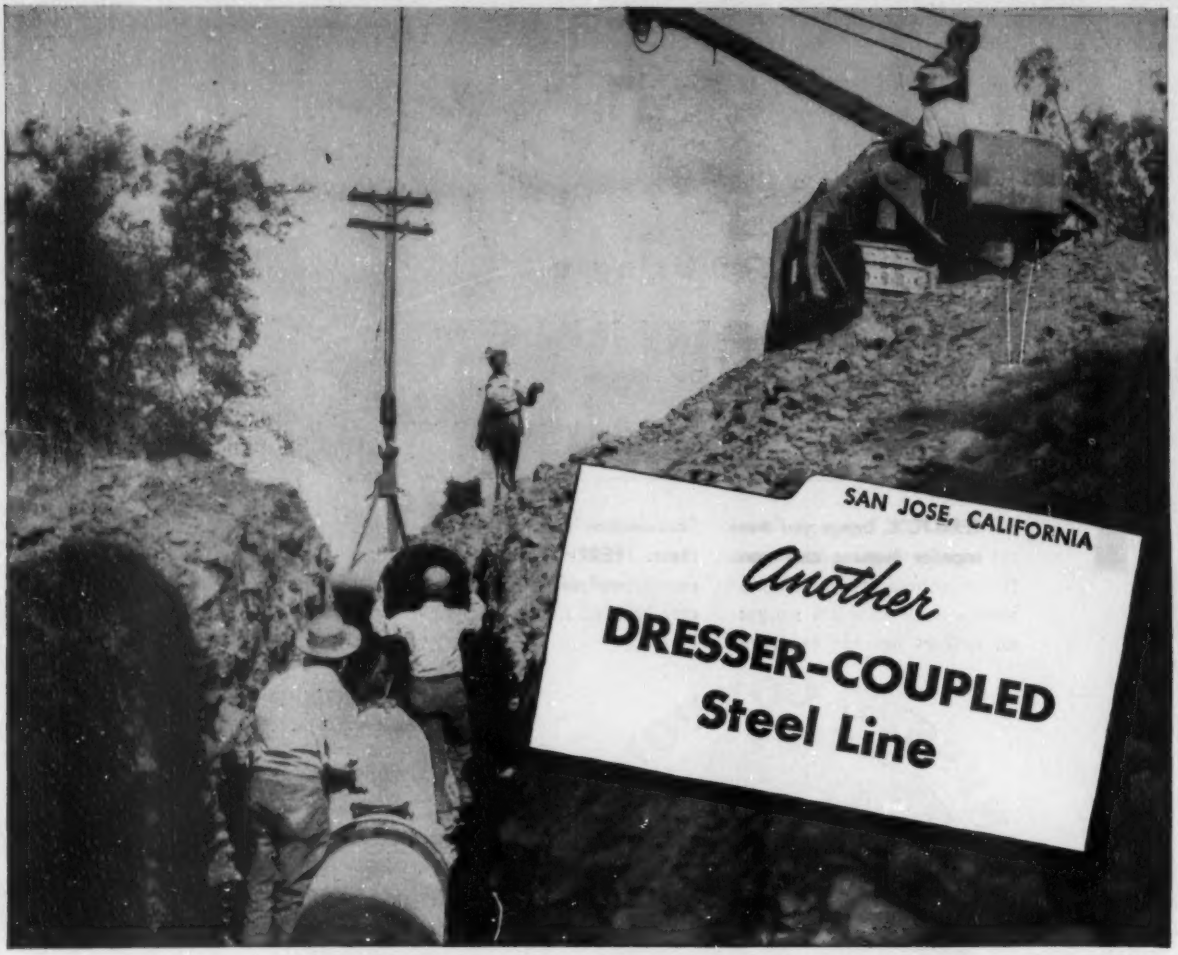
Free Literature!

Samples, Specifications and Detailed Information on Request.

TENNESSEE TC CORPORATION

TENNESSEE CORPORATION

617-29 Grant Building, Atlanta, Georgia



DELIVERS WATER CHEAPER

San Jose installs 12-mile Dresser-Coupled steel line . . . augments water supply from new reservoir.

Crossing the new Water Conservation District reservoir—replacing 8,000 ft. of flume, now submerged—this Dresser-Coupled steel line carries an increased water supply to San Jose, Los Gatos and Saratoga, California. Having installed over 200 miles of steel pipe since 1946, San Jose engineers are well acquainted with the many advantages of Dresser-Coupled construction.

The beam strength of lighter weight steel pipe, plus the resilience of both pipe and couplings, assures a permanently tight line unaffected by surface shock, ground shift or washouts. Rugged coatings make the line impervious to corrosion and incrustation. Glass-smooth pipe linings sustain high flow-coefficients.

Long pipe lengths require fewer joints per mile —reduce laying costs. Small crews, with a minimum of skill, supervision and heavy equipment, make Dresser joints faster, surer—speed construction schedules. This adds up to lower cost, maintenance-free lines.

BE SURE **you get the *best* line at the *best* price. Always put steel pipe and Dresser Couplings in your specifications.**

DRESSER® COUPLINGS

Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston, Texas; 101 S. Bayshore Highway, South San Francisco, California. Sales Offices: New York, Philadelphia, Chicago, Houston, South San Francisco. In Canada: Toronto, Ont.

Interchangeable Parts

Keep Costs Down

WITH

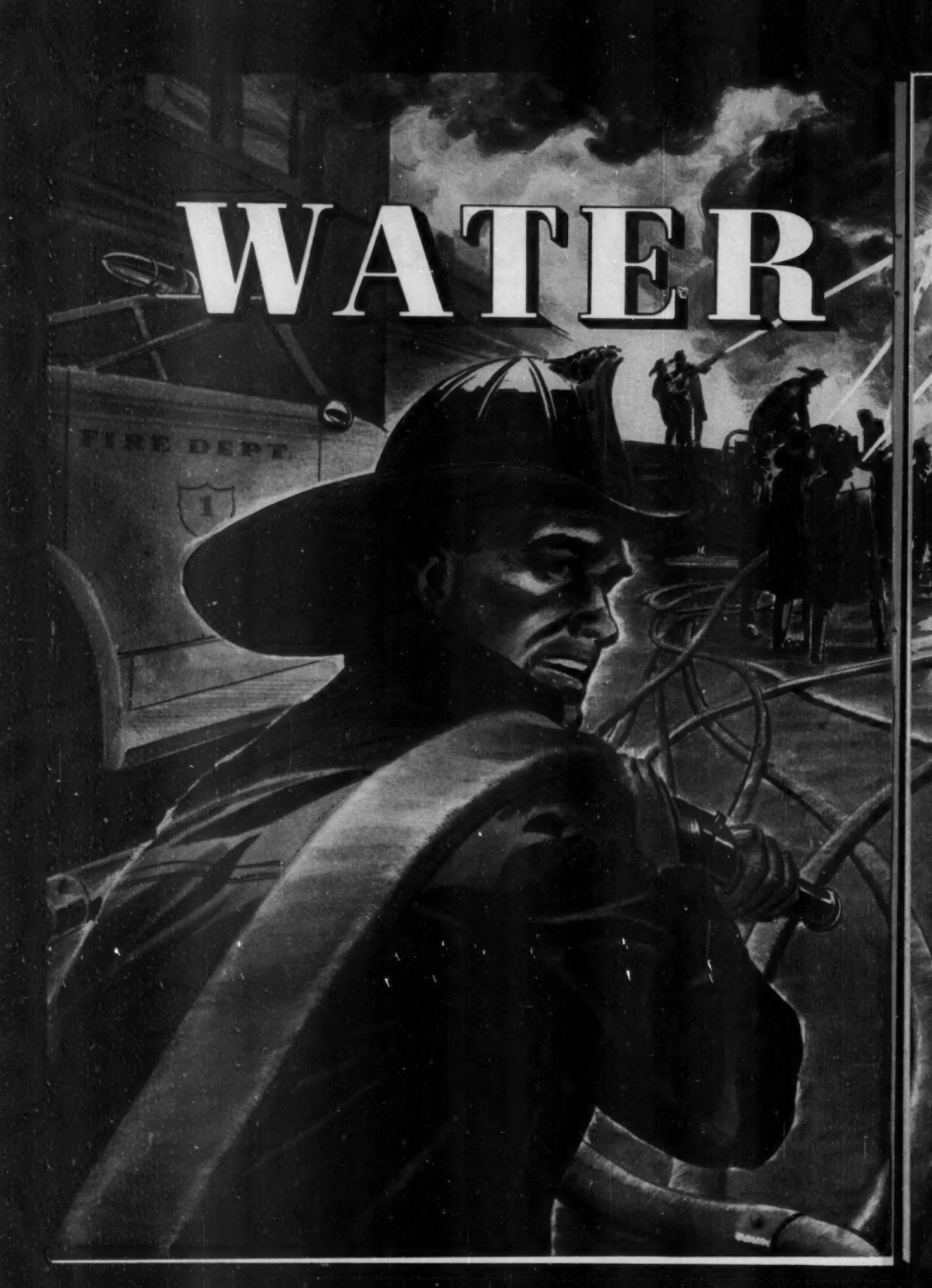
CHAPMAN
Standard
SLUICE GATES

There's no need for match-marking on a Chapman *Standard* Sluice Gate installation. Component parts are absolutely interchangeable, made to fit perfectly, every time, without alterations.

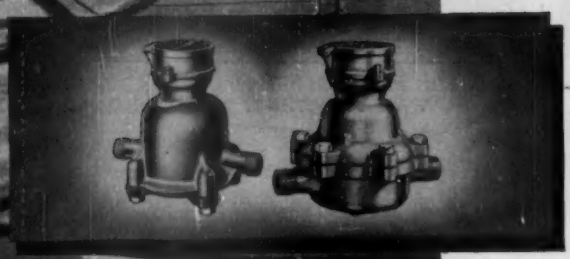
That means installation is always fast and simple. And replacement parts, if necessary, fall right into place without fitting.

Chapman Standard Sluice Gates are available in a wide range of sizes and designs to meet the needs of almost any installation. Many special designs are also available at slight extra charge. All with any type of operating control you want — manual, hydraulic, or electric motor. Write now for Catalog 25.

THE CHAPMAN VALVE MFG. CO.
INDIAN ORCHARD, MASSACHUSETTS


WATER
FIRE DEPT.
1

is vital...



BADGER meters conserve it!

Water saves lives in emergencies... and millions of gallons are required for fire-fighting alone each year. Badger water meters help thousands of communities to conserve water for such needs... measure water precisely for homes and industry . . . provide an accurate check on water usage and water waste. And the record of Badger meter performance, known everywhere, has caused thousands of waterworks men to say—"It pays to choose Badger!"

BADGER WATER METERS

BADGER METER MFG. CO., Milwaukee 45, Wisconsin

"Measuring the water of the world"

LOWEST COST PIPE INSTALLATION...

2" to 24" BORES - Up to 250' long.

Send COUPON Today!

Hydrauger Corp., Ltd.
681 Market St., San Francisco, Calif.
Please send, without obligation to me, the HYDRAUGER BOOKLET which shows relative costs and speeds of BORING as well as specifications of various Hydrauger models.

NAME _____ STATE _____
ADDRESS _____
CITY _____

HYDRAUGER*

Reg. U. S. Pat. Office

UNDER STREETS
UNDER FREEWAYS
UNDER GARDENS
UNDER PAVEMENT

OPEN HOLE

HY-29A

AVOIDS EXCESSIVE TRENCHING

Hydrauger bored holes for pipe installation invariably reduce costs 80% to 90% by eliminating trenching and back-filling to say nothing of man-hour labor savings and safety to highway traffic.

*Earth Boring Tool

HYDRAUGER CORP. Ltd.
681 Market Street
San Francisco, California

Public Property PROTECTION is our business

For your protection Stewart produces chain link wire and iron picket fence; wire mesh partitions; wire window guards; steel folding gates. Also flagpoles; settees; bronze plaques and other metal specialties. Write for catalogs. Please mention products in which you are especially interested.

THE STEWART IRON WORKS CO., INC.
2121 Stewart Block, Cincinnati 1, Ohio
Experts in Metal Fabrications since 1886

No. 370 Settee

Wire Mesh Partitions

Stewart IRON and WIRE FENCES

ANTHRAFILT
(Reg. U. S. Pat. Off.)

A Filter Medium For All Purposes

Has outstanding advantages over sand and quartz media:

1. Length of filter runs doubled
2. Only about one-half as much wash water required
3. Less coating, caking or balling with mud, lime iron or manganese
4. Filters out of service less because of shorter wash cycle
5. Better removal of bacteria, micro-organic matter, taste and odor
6. Increased filter output with better quality effluent
7. Not just the top portion, but the entire bed, aids in filtering
8. Can be used in all types of filters using a filter medium
9. A perfect supporting medium for synthetic resins
10. An ideal filter medium for industrial acid and alkaline solutions
11. Decidedly advantageous for removal of fibrous material as found in swimming pool filters

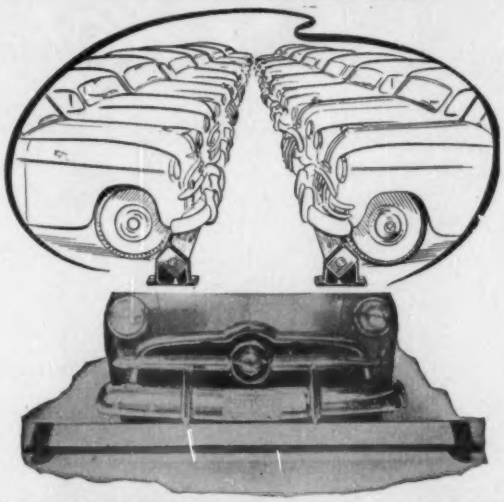
Additional information, recommendations and quotations furnished upon request by

PALMER FILTER EQUIPMENT COMPANY
822 E. 8th St. Erie, Pa.
Engineers and Sales Agents

REPRESENTING —

ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

IDEAL FOR "OFF THE STREET" PARKING
WITH OR WITHOUT PARKING METERS



SALIENT FEATURES OF HAR-BAR BARRIERS

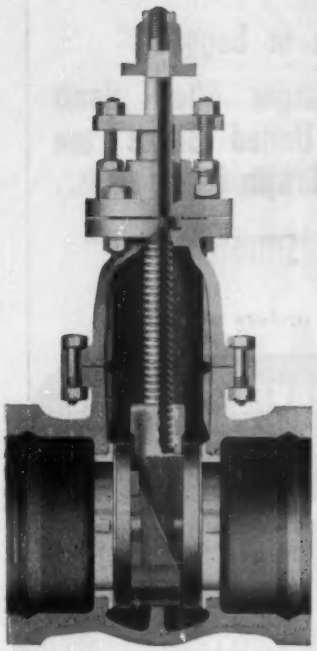
1. High enough to stop your car.
2. Low enough to clear your bumper guards.
3. Barrier is above ground — no drainage problem.
4. Barrier is above ground — no rotting of wood.
5. Automatically spaces your cars.
6. Follows contour of your ground.
7. Easily installed — just line up and drive the anchor pins.
8. Easily moved — just pull the anchor pins.
9. Easy to clean under.
10. Easy to maintain.
11. Installed on any kind of surface — black top, cement, macadam, gravel or cinders.
12. It really dresses up your parking lot.
13. You always stop against your tire — no shock.
14. All Castings are aluminum — no rusting.

Send us a plot plan of your parking lot—we do the engineering free.

HARRIS - BARRIER INC. 5407 N. PENNSYLVANIA STREET INDIANAPOLIS 5 - INDIANA

DARLING VALVES

Serving Municipalities and Public Works everywhere



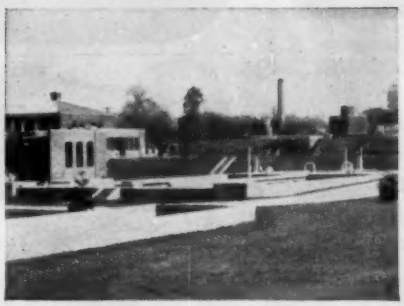
Note rugged simplicity of this unique Darling principle—just four sturdy working parts . . . two plain interchangeable no-pocket discs and two husky wedges. With this foolproof assembly, maintenance is easy.

FILTRATION PLANTS

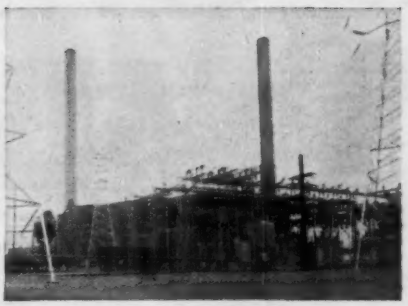
PUMPING STATIONS

DISTRIBUTION SYSTEMS

RESERVOIRS



SEWAGE PLANTS



POWER PLANTS

DARLING Revolving Double Disc VALVES are stand-outs in every application

AN enviable record for outstanding public service . . . and of course there are many good reasons for Darling valve dependability and low-cost service.

1. The *fully revolving double disc parallel seat* Darling valve compensates automatically for any valve body distortion . . . your assurance of tight closure even under extreme service conditions.

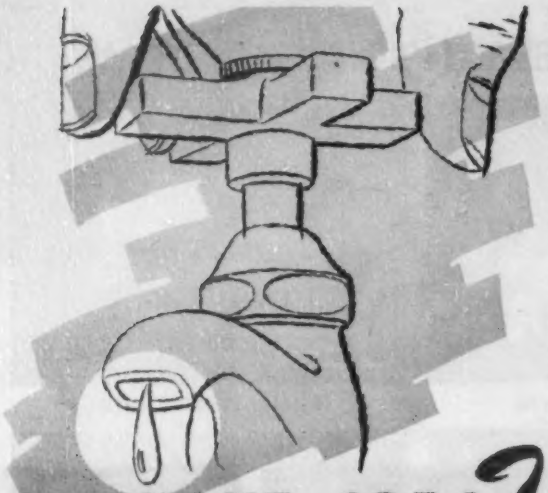
2. The *fully revolving double discs* minimize wear and assure you of tight closure throughout the life of the valve.

Water and sewage engineers everywhere are saving time and cutting valve maintenance costs thanks to Darling *revolving disc* gate valves. Darlings are available in a wide range of sizes for all normal and unusual service . . . for pressures up to 1500 pounds. Write for all the facts. *Address* . . .

DARLING VALVE & MANUFACTURING CO.

Williamsport 10, Pa.

Manufactured in Canada by The Canada Valve & Hydrant Co., Ltd., Brantford 7, Ontario



DROUGHT 1954?

will **YOUR WATER** *supply*
be **ADEQUATE** *this year?*

Last summer, a RANNEY collector at Kirkwood, Mo., in the heart of the drought area, yielded 75 per cent of designed capacity, although the area stream flow and rainfall was 43 per cent below normal.

THIS IS PROOF THAT . . . .

the RANNEY supplies a huge volume of naturally filtered water, even under severe drought conditions.

The unique RANNEY, with its screened, horizontal well points that never clog, will produce more cool, pure water from one well for less money, than ever before possible.

before you **INVEST**
investigate the **RANNEY** *method*

Water Supply Engineers and Contractors

RANNEY

Method Water Supplies, Inc.

841 Alton
Columbus 19, Ohio

write for **FREE BOOK**

Please send further information on Ranney Water Collectors.

NAME

COMPANY

STREET

(CITY & STATE)

AC-5

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

PROMPT SHIPMENT

Inquiries and orders solicited.

NORTHERN GRAVEL COMPANY
Muscatine, Iowa
P. O. Box No. 307 Phone: 4261

The *NEW IMPROVED* **NETCO CATCH BASIN CLEANER**
WITH PNEUMATIC CONTROLS

A Necessity For Every Municipality

Easily mounted on any short wheel base truck with 8 ft. in back of the cab, the Netco can be operated continuously, averaging 20 to 30 catch basins a day. The Netco with its two powerful pneumatic buckets (orange peel or clamshell) is simple to operate, has a hoisting capacity up to 1500 lbs., and easily removes all debris through openings as small as 16 inches. ***Send for our six-page descriptive folder.***

NETCO DIVISION
CLARK-WILCOX COMPANY
118 Western Avenue
Boston 34, Massachusetts

Beautify as you protect city equipment, water and sewage works, fences, stop signs, fire hydrants, street lights, tanks, trucks, etc.!

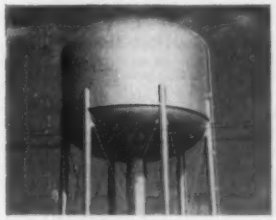
RUST-OLEUM saves time, money, and metal!—and beautifies as it protects! Brush RUST-OLEUM 769 Damp-Proof Red Primer right over the remaining rust after scraping and wirebrushing to remove rust scale and loose rust! Easy as that to save even badly rusted metal! For colorful beauty, use any of RUST-OLEUM's distinctive finish coatings in ALUMINUM, RED, WHITE, GREEN, GRAY, BLUE, ORANGE, BLACK, and many others. RUST-OLEUM resists rain, snow, sun, fumes, heat, salt water, salt air, weathering, etc. to give you colorful, lasting protection. See your local classified telephone directory under Rust Preventives or Paints for nearest source of supply, or mail coupon today.

STOP RUST!

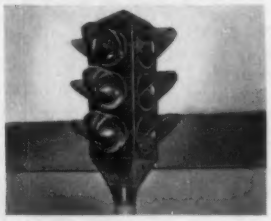
with

RUST-OLEUM®

Available in Aluminum, Black, White, Red, Green, Gray, Blue, Orange and many others.



Water tanks, fuel tanks—all need RUST-OLEUM decorative beauty and lasting protection.



Stop lights, stop signs, and fire hydrants are another way to utilize RUST-OLEUM protection.

RUST-OLEUM matches such original manufacturer's colors as Harvester, Caterpillar, and many others for your tractors, trucks, etc.

Use bright RUST-OLEUM colors on your tanks, pumps, pipes, and machinery indoors and out.

Street lights need RUST-OLEUM's year 'round resistance to salt water, salt air, rain, snow, sun, fumes, heat and weathering.

You'll find RUST-OLEUM at work in water and sewage plants all over the country—giving decorative beauty and lasting protection.

ATTACH TO YOUR LETTERHEAD AND MAIL TO:

RUST-OLEUM CORPORATION, 2515 Oakton Street, Evanston, Illinois

- ☐ Please Send Me A FREE TEST SAMPLE To Apply Directly Over Sound Rusted Surfaces.
- ☐ Complete Literature With Color Charts.
- ☐ Have A Qualified Representative Call.
- ☐ Nearest Source of Supply.

FIRST

. . . and Best!

TODD INSECTICIDAL FOG APPLICATOR

TIFA

Successfully Used for over 9 Years in Community Fly and Mosquito Programs

Tifa was first in the field of fog applicators. Tests have proved it best in the field for space control around the community . . . on the dump, over pools, in suburbs, everywhere insects swarm!

This amazing machine discharges newly-developed insecticides as well as the older types in a true, clean fog which spreads quickly and permeates the deepest crevices. This ability means a better insect control program for your community. Put Tifa to work for you!

Efficiency Features

Uses insecticides in solutions, emulsions or suspensions.

Produces penetrating fog, dry or wet as you wish.

Droplet Control ranges from ½ to 200 Microns.

CARRYING
Underwriters' Listing Seal

Write for illustrated folder with full details and official comments.

COMBUSTION EQUIPMENT DIVISION
TODD SHIPYARDS CORPORATION
81-16 45th Avenue, Elmhurst 73, New York

LONGER RANGE—TARGET VALUE FOR YOUR HIGHWAY TRAFFIC SIGNS WITH GROTELITE REFLEX REFLECTIVE SHEETING

Grotelite REFLECTIVE SHEETING

SMOOTH S S SURFACE

This highly reflective, smooth surface reflex reflective sheeting makes a smashing, attention-compelling sign with longer range target value and full range legibility. Easily read night or day. The smooth, durable, self-cleaning surface can be screened, sprayed or brushed. It is easy to apply and makes the best long life, economical signs and markers. Available in sheets and completed signs.

STOP

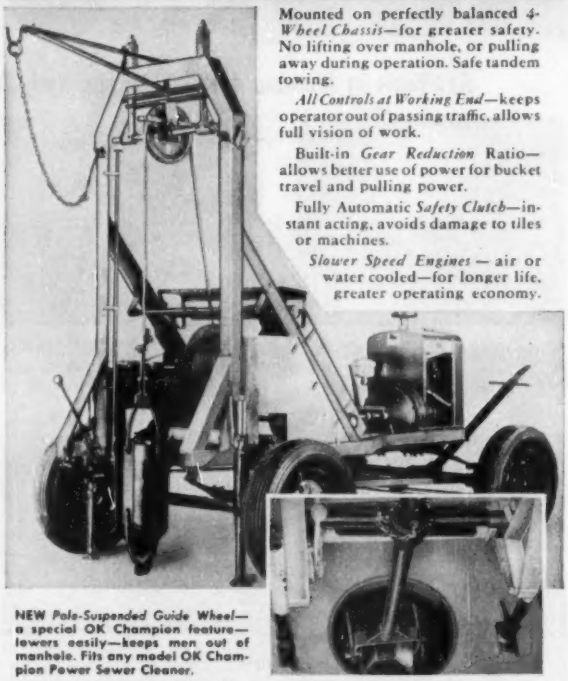
THE Grote MANUFACTURING CO., Inc.
GROTE SQUARE - BELLEVUE, KY.
(Established 1901)

Complete Line of Embossed Metal Traffic Signs, Reflectors and Street Name Plates

DEAD END

SIGNALS AHEAD

OK CHAMPION POWER SEWER CLEANERS



Mounted on perfectly balanced *4-Wheel Chassis*—for greater safety. No lifting over manhole, or pulling away during operation. Safe tandem towing.

All Controls at Working End—keeps operator out of passing traffic, allows full vision of work.

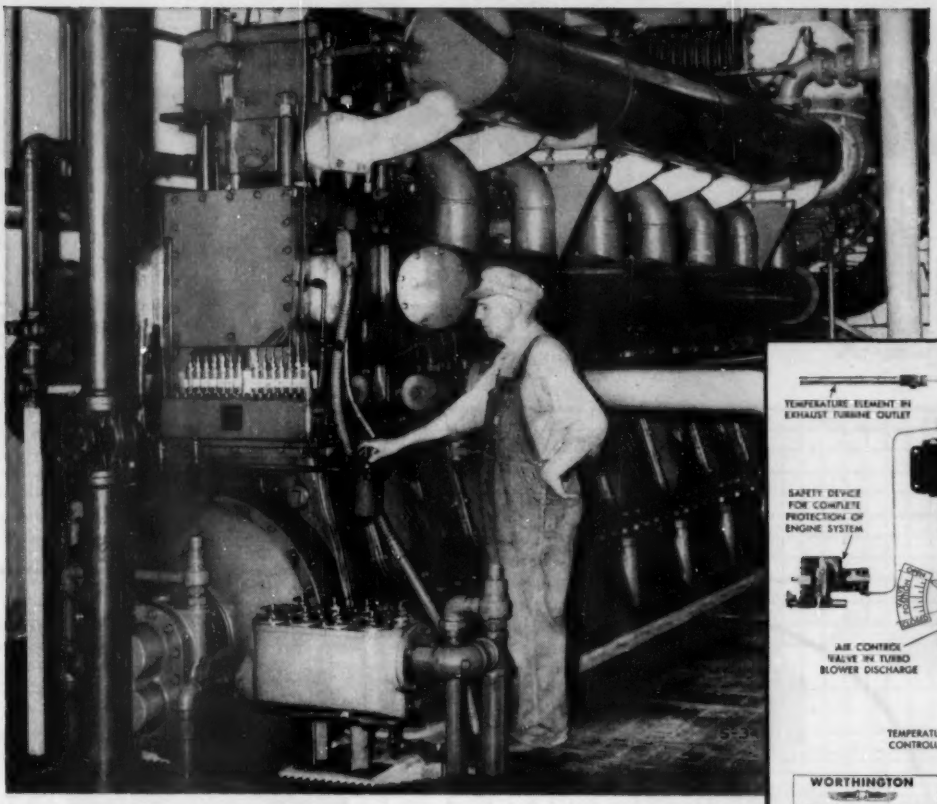
Built-in *Gear Reduction* Ratio—allows better use of power for bucket travel and pulling power.

Fully Automatic *Safety Clutch*—instant acting, avoids damage to tiles or machines.

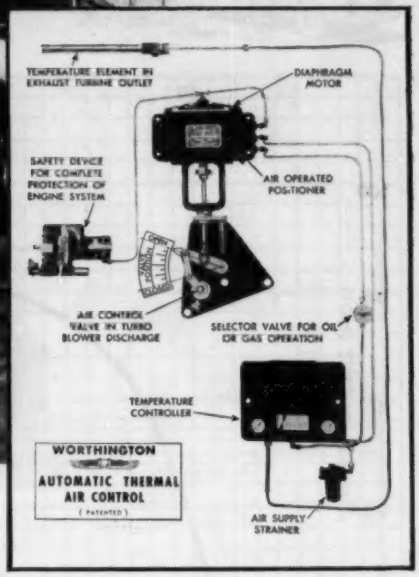
Slower Speed Engines — air or water cooled—for longer life, greater operating economy.

NEW *Pole-Suspended Guide Wheel*—a special OK Champion feature—lowers easily—keeps men out of manhole. Fits any model OK Champion Power Sewer Cleaner.

Write for latest OK Champion Circular
CHAMPION CORPORATION • 4716 Sheffield Ave. • Hammond, Ind.



WORTHINGTON 1,000-KW CAPACITY SUPERCHARGED DUAL FUEL DIESEL with Worthington's Automatic Thermal Air Control, used in conjunction with municipal steam generating plant at David City, Nebraska.


TEMPERATURE ELEMENT IN EXHAUST TURBINE OUTLET
DIAPHRAGM MOTOR
SAFETY DEVICE FOR COMPLETE PROTECTION OF ENGINE SYSTEM
AIR OPERATED POSITIONER
AIR CONTROL VALVE IN TURBO BLOWER DISCHARGE
SELECTOR VALVE FOR OIL OR GAS OPERATION
TEMPERATURE CONTROLLER
WORTHINGTON
AUTOMATIC THERMAL AIR CONTROL
(PATENTED)
AIR SUPPLY STRAINER

Cost-per-kw down over 60% with Worthington Dual Fuel Engine

David City, Nebraska—this city has proof that the Worthington Dual Fuel Diesel can reduce power-plant operating costs.

Engineering of this installation—made in August, 1949—was under the direction of Black and Veatch, Kansas City, Mo., Consulting Engineers. At the present time the unit operates at only one-third capacity in supplementing steam power generation.

In spite of these poor load conditions, the David City plant's overall operating cost per kw was down 60% the first year this engine was used.

ONE BIG REASON YOU GET MORE EFFICIENCY FROM THIS ENGINE

Worthington's Automatic Thermal Air Control—an exclusive patented Worthington feature—is one of the biggest reasons you get more efficiency from this dual fuel engine—or from Worthington gas engines.

Unlike any air throttling mechanism dependent on governor action, this unit is actuated by engine exhaust temperature.

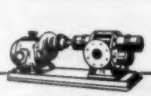
It maintains optimum air-fuel ratio at all times; provides automatic variation of air quantity in direct relation to ambient air temperatures; automatically compensates for changes in the heating values of the gas fuel (this would require manual adjustment where air-throttle controlled governor is used); maintains highest fuel economy at all loads regardless of changes in air temperature or fuel quality.

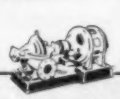
Worthington engines can increase *your* plant's efficiency and lower its operating costs. For more facts on Dual Fuel or other engines, gas or Diesel, write for bulletins to Worthington Corporation, Engine Division, Buffalo, N. Y.

E.3.1

Worthington-Built Auxiliaries

ENGINE STARTING COMPRESSORS


OIL TRANSFER PUMPS


COOLING WATER CIRCULATING PUMPS

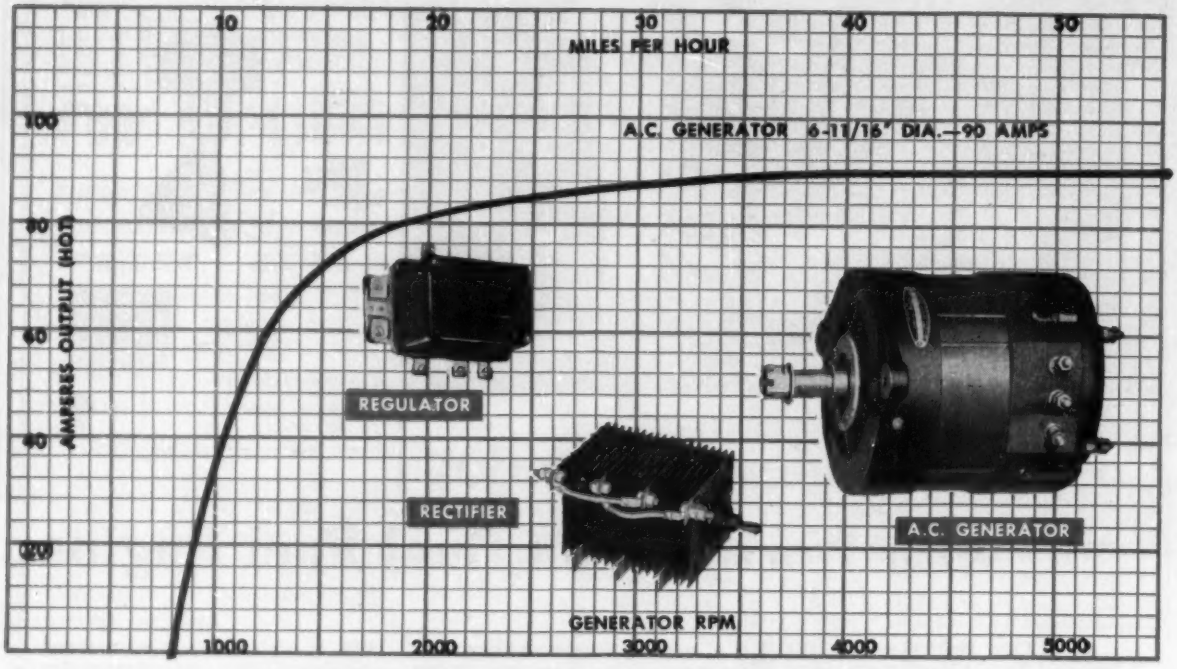
EVAPORATIVE-TYPE ENGINE WATER COOLERS

WORTHINGTON
Engines

Economical Continuous Power—Diesel Engines, 150 to 2,100 hp . . . Gas Engines, 190 to 2,100 hp . . . Dual Fuel Engines, 345 to 2,100 hp.

Power Packed and

HERE'S THE A.C. ANSWER TO EXTRA-HEAVY ELECTRICAL DEMANDS



DELCO-REMY

A. C. Generator, Regulator and Rectifier

Here's the answer for "problem" vehicles—Delco-Remy's new long-lived A.C.-D.C. charging system! It's specifically designed to meet the *extra*-heavy electrical demands of public utility trucks and other vehicles equipped with two-way radio, floodlights or any extra electrical units . . . ample current reserve picks up discharged battery quickly in operation. Delco-Remy A.C. generators are suitable for use at all engine speeds.

With output ranging from 30-40 amperes at curb idle and up to 90 amperes at higher engine speeds, the new Delco-Remy A.C.-D.C. charging system meets all electrical needs under the toughest operating conditions. Included in the new system is the A.C. generator, a matching regulator, and a rugged, dependable dry-plate rectifier which converts generator A.C. output to direct current.

Application packages complete with installation instruction sheets for popular makes of cars and trucks are now available. The conversion job is simple. For further details and application data, see your nearest United Motors distributor.

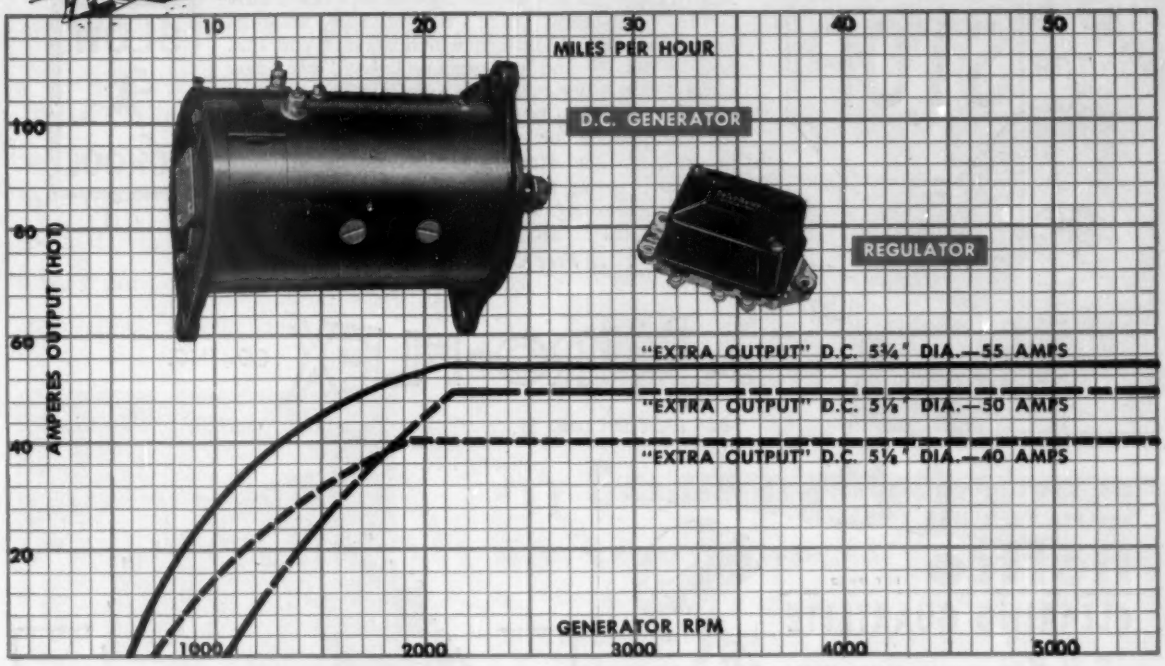
A GENERAL MOTORS PRODUCT — A UNITED MOTORS LINE

DISTRIBUTED BY WHOLESALERS EVERYWHERE

WHEREVER WHEELS TURN OR PROPELLERS SPIN

Right for the Job

HERE'S THE D.C. ANSWER TO HEAVY ELECTRICAL DEMANDS



DELCO-REMY

Extra-Output D. C. Generators and Matching Regulators

Delco-Remy extra-output D.C. generators are an economical answer to the electrical needs of public utility pickup or panel trucks as well as other vehicles with additional lights, two-way radios, or other special electrical equipment in medium to heavy-duty service. Delco-Remy extra-output D.C. generators are low in cost, simple to install, economical to maintain.

DELCO-REMY 40-AMP GENERATOR has low cut-in, about 7 mph, charges from 11 to 17 amperes at curb idle . . . full output about 18 mph —for vehicles customarily used in heavy traffic.

DELCO-REMY 50-AMP GENERATOR has slightly higher cut-in, about 11 mph . . . full output about 21 mph—for vehicles customarily operated at higher speeds, with minimum slow driving.

DELCO-REMY 55-AMP GENERATOR has very low cut-in, about 6 mph; charges at curb idle from 20 to 30 amperes . . . attains full output at 20 to 25 mph—for vehicles customarily operated at low speeds with added electrical loads, such as city taxicabs and police cars.

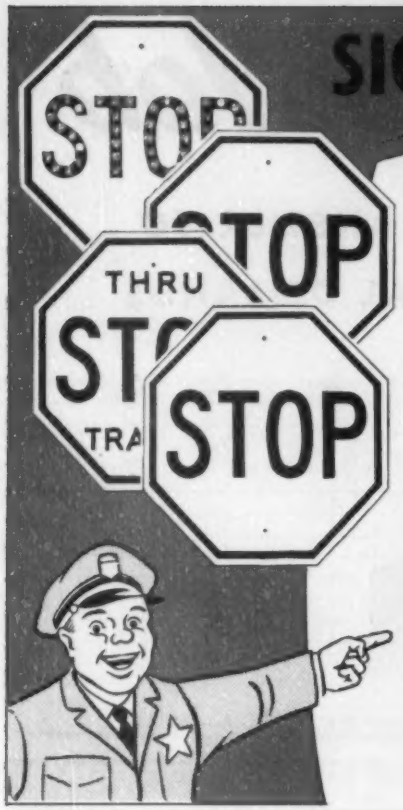
For further details and application data, see your nearest United Motors distributor.

Delco-Remy

DIVISION, GENERAL MOTORS CORPORATION, ANDERSON, INDIANA

WHEREVER WHEELS TURN OR PROPELLERS SPIN

SIGNS THAT PREVENT DISASTER



YOU CAN DEPEND ON SIGNS BY MIRO-FLEX

Miro-Flex Stop Signs Are Now Available in Black on Yellow or White on Red, Plain or Reflectorized.

Miro-Flex signs are a sure sign of efficient traffic control and safety. There's dependability stamped into every Miro-Flex sign which assures you that both motorists and pedestrians know *"what you mean."* It's America's finest sign line . . . municipalities, governing bodies and industry have relied upon Miro-Flex for years to supply signs of every nature . . . from street name assemblies and stop signs to highway markers and special-made signs. All Miro-Flex signs conform to standards of the United States Public Roads Administration.

Write for Your Free Copy of "Signs by Miro-Flex"

THE MIRO-FLEX CO., INC.

1824 EAST SECOND ST. WICHITA, KANSAS

NO STOOP, NO SQUAT, NO SWEAT
WHEN YOU USE THE

Hoffco PAT. PEND.

CLEARING QUARTETTE

2 H.P. POWER UNIT AND FOUR SPECIALIZED CUTTING HEADS!

Most efficient team sold, HOFFCO's 2 HP Power Unit—4 worksaving attachments. Size up the job, attach the right cutting head, move 6 times faster, stand upright every second. 1000's now in use. See it demonstrated today!

WRITE FOR COMPLETE INFORMATION

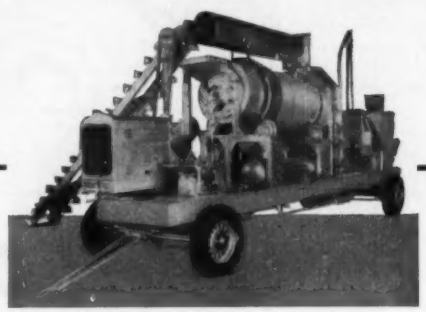
SAWETTE HEAD $64.50
Chain saw falls growth up to 8" in diameter. You stand upright!

TRIMETTE HEAD $59.75
Circular blade trims close—spreads mulch evenly—no raking!

SCYTHETTE HEAD $39.75
Clears weeds, brush, any tangle—even works under water!

BRUSHETTE HEAD . . $59.75
Guarded 10" blade clears stubble, brambles—rips 3" dia. trees; protects operator!

HOFFCO, inc. ALL PRICES F.O.B. FACTORY RICHMOND, INDIANA



Cities Can Save On Street Repairs With White Portable Plants

These 8-10 tons per hour Asphalt Plants economically repair almost any pavement. Asphalt, brick, concrete, macadam, can be resurfaced or patched. Alleys, sidewalks, driveways can be paved.

Produce for immediate hot laying, or for deferred cold patches. Match any bituminous surface.

Mixes at plant, including labor, fuel, and overhead cost about $4 per ton, with $2 aggregate. Average 160 to 200 sq. yds., 1" thick per hour. Compare this with your present costs!

Also larger plants, 15 and 30 tons per hour.

Write for catalog and name of nearest dealer.

White Mfg. Co.

ELKHART 1 INDIANA

In Evanston . . .

STEELBINDER

Fastens the Signs

A. J. Gerrard & Company, a leader in the steel strapping field, salutes a leader among America's suburban communities, Evanston, Ill. Many times a winner of national traffic safety awards, Evanston's alert traffic department found Steelbinder the outstanding, safe method of fastening street signs. Scores more have reported like findings. We invite you to investigate and compare.

Famous Fountain Square, the heart of Evanston's shopping district.

Top Picture: Z. A. Faulkner, Evanston's traffic engineer, inspects a batch of signs ready for Steelbinder installation.

Bottom Picture: An Evanston traffic maintenance man on the job with Steelbinder equipment.

Try Evanston's Method . . .

. . . the Steelbinder way of Strapping signs. Our "Street Signs" brochures will familiarize you with this time-saving, economical, more efficient method of sign strapping. Write for them today . . . A Steelbinder service representative will gladly help you solve your sign strapping problems.

STEELBINDER

• Strapping in stainless or galvanized steel for sign applications. Also aluminum and many other strap types to fill every sign strapping requirement.

• Complete line of sign-attaching accessories—brackets, extension arms, bolts and seals in stainless and galvanized finishes.

Sales-Service Offices in 45 Principal Cities

WAREHOUSES IN 6 KEY CITIES

BIRMINGHAM CLEVELAND OAKLAND MELROSE PARK NEWARK PORTLAND

STEEL STRAPPING

A. J. Gerrard & Co.

1950 HAWTHORNE AVE.
MELROSE PARK (CHICAGO SUBURB) ILLINOIS

AURORA, ILLINOIS *Also* REDUCES SEWER MAINTENANCE COSTS WITH "*Flexibles*"

We believe Aurora's satisfaction with its new "Flexible" SeweRodeR can best be told from these excerpts from a letter written January 30, 1954.

"We received our SeweRodeR . . . on or about January 5, and would like at this time to advise that this machine has already reduced our sewer maintenance costs and we feel it will be a great advantage to our city to have it . . . we have found a lot more can be accomplished with the SeweRodeR each day and with less manpower. All the work is done from the street level by lowering the auger with a rope to the main. Would also like to compliment Mr. W. G. Weichel who demonstrated . . . and trained our men to operate it.

"If at any time we can be of service to you by demonstrating the machine to anyone who is interested, please feel free to call on us.

Very truly yours,
GEORGE ORLAND
Commission of Public Property
City of Aurora, Illinois."

Note: The "Flexible" SeweRodeR not only takes 9/10 of the usual hard work out of cleaning sewers . . . but permits preventative maintenance to be carried on without interference by weather.

Write for our **FREE** *Catalog*

Flexible **SALES CORPORATION**

3786 Durango Ave., Los Angeles 34,
(DISTRIBUTORS IN PRINCIPAL CITIES)

AMERICA'S LARGEST LINE OF PIPE CLEANING TOOLS AND EQUIPMENT

here's a Power LEAF MILL *that really does a job!*

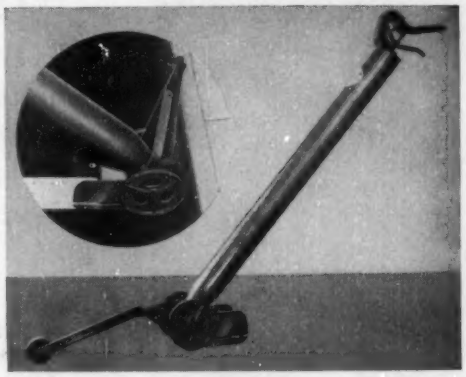
Based on an entirely *new* principle, the TURBO JET* Power Leaf Mill employs a high velocity stream of air to whisk up fallen leaves, grate them into a fine powdery chaff, and blow them back into the lawn for a valuable mulch. Discharge stream of air can be used as blower to pile leaves into windrows or move leaves to more accessible ground.

Turbo Jet GOES ANYWHERE—GETS LEAVES OUT OF IVY BEDS, FROM AROUND COPINGS, FENCES, SHRUBS—MANY "HARD-TO-REACH PLACES"

Light and simple to operate, *economical*, sturdily constructed. TURBO JET is the first *practical* solution to leaf raking! Write today for folder, name of nearest dealer.

TURBO JET

THE TURBO JET MFG. CO.
22 Bowman Terrace
CINCINNATI 29, OHIO *Pat. Pend.



NEW FLORLINE

Street, Safety, Parking Lines

At Walking Speed. Now With Third Wheel Guide for Fast Straighter Lines At No Extra Cost! **$97.50** F.O.B. Detroit

Communities coast to coast are cutting maintenance costs of traffic and parking lines with FLORLINE. The new third wheel, 18" forward of carriage, keeps machine "in line" long before marking begins. Guide wheel arm automatically folds back at curb, lets machine mark right up to barriers

1 man, 1 hand operation. No attachments. Gravity feed. Makes curved, straight, continuous or skip lines, 2, 3, or 4" wide with interchangeable carriages. Holds 1½ gals. paint, lacquer, whitewash. Cannot spill. Portable, easy to clean and store. FULLY GUARANTEED.

H. C. SWEET CO.
24396 West 7 Mile Rd. Detroit 19, Mich.

Mr. Frank Sitherwood, Chief Engineer of Auburn plant, with two supercharged Superior Dual-Fuel Diesels which have a total capacity of 2880 h.p.

Auburn, Nebraska, pays off power plant debt

5 years ahead of schedule!

This year, the Board of Public Works of Auburn, Nebraska, plans to pay the last $76,000 of a bonded debt which totaled $279,000.00, five years ago. This final payment is five years ahead of schedule, for which the Board gives credit to a pair of Superior Dual-Fuel Diesels.

The first Superior, originally a straight diesel rated at 960 h.p., was installed in the power plant in 1946. Dual-fuel equipment was added in 1948, to enable the engine to operate on diesel or natural gas, depending on supply and price.

The following year, the Board produced 190,000 *more* kilowatt hours of electricity for 21,800 *less* dollars. Fuel savings accounted for all but $250 of the total cost reduction!

When Auburn's generating capacity had to be increased in 1949, the Board bought a new Superior supercharged dual-fuel diesel—for obvious reasons—and in 1952, added a supercharger to the first one.

This is just one example of the many outstanding economy records made by Superior and Atlas Diesels. You can easily get more information on the engines to profitably meet your power needs by calling the nearest sales and service office listed below.

DIESEL DUAL FUEL GAS — ATLAS Imperial DIESEL ENGINES — Superior ENGINES — DISTRIBUTOR OF Lister DIESELS IN U.S.A.

THE NATIONAL SUPPLY COMPANY

ENGINE DIVISION PLANT AND GENERAL OFFICES: SPRINGFIELD, OHIO

SALES AND SERVICE POINTS: Gloucester, Massachusetts • Houston, Texas • Fort Worth, Texas • San Diego, California Oakland, California • Terminal Island, California • Ketchikan, Alaska • Washington, D.C. • Chicago, Illinois • Portland, Oregon • Astoria, Oregon • Casper, Wyoming • Halifax, Nova Scotia • Vancouver, B.C. • Toronto, Ontario • Park Rapids, Minnesota • New York, New York • Seattle, Washington • New Orleans, Louisiana • Pittsburgh, Pennsylvania

Stockpiles coal, sand, aggregate. Has traction and flotation to work right up on the pile.

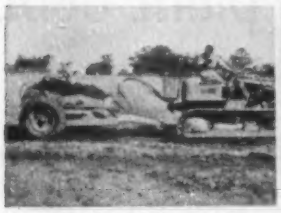
Excavates, fills, levels. Compact — for work in limited areas.

Backfills ditches, packs and levels ground with 16,200 lb. weight.

Cleans up rubble with one-cu. yd. tractor-width bucket.

Lifts material where needed. Saves manpower and need for other equipment.

Does sanitary fill work — digs, fills, covers, levels.



Does drawbar work scraping . . . hauling.

Landscapes, grades or slopes lawn areas around building projects.

ALLIS-CHALMERS HD-5G

Always Busy...

because it does so many jobs so well!

Busy equipment is profitable equipment. And thousands of owners are learning every day the year around that there's no more profitable machine on their jobs than the one-yard Allis-Chalmers HD-5G Tractor Shovel.

Loads sand, dirt, snow — any material to dumping height of 9 ft., ¼ in.

TEN QUICK-CHANGE ATTACHMENTS ADD TO HD-5G VERSATILITY

Bulldozer	Trench Hoe
Narrow Bucket	Lift Fork
Rock Bucket	Tine Fork
Crane Hook	Rock Fork
Light Material Bucket	Ripper

Larger size Allis-Chalmers tractors with shovels and other quick-change attachments offer the same wide utility, the same outstanding performing ability as the popular HD-5G. Choose the one that fits your needs.

1-YD. HD-5G	2-YD. HD-9G	3-YD. HD-15G	4-YD. HD-20G
40.26 drawbar hp.	72 drawbar hp.	109 drawbar hp.	175 net engine hp.
Dumping height*	Dumping height*	Dumping height*	Torque Converter Drive
9 ft., ¼ in.	11 ft., 4 in.	12 ft., 8 in.	Dumping height*
			13 ft., 5 in.

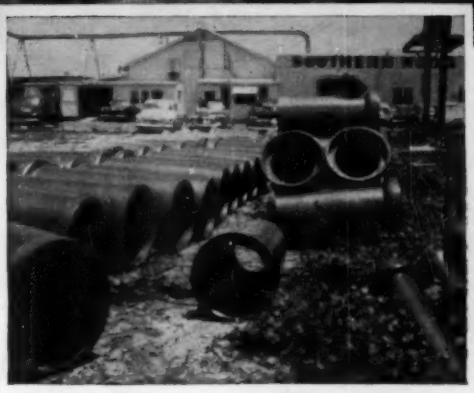
*Height of bucket hinge

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

When Sewerage Projects are Bond-Financed...

Look for Vitrified CLAY PIPE



When a municipal sewerage project is financed by bonds that won't mature until 1993, the pipe has to be good. It *must* not fail—especially before the bond issue has been retired. That's why city officials and sewerage contractors all over the country confidently specify, buy, and install Vitrified Clay Pipe. They know Clay Pipe is the *only* pipe . . .

- **Completely unaffected by sewage acids and corrosive industrial wastes . . .**
- **Sure to last regardless of the fluids that may flow through it in the future . . .**
- **Guaranteed for 50 years!**

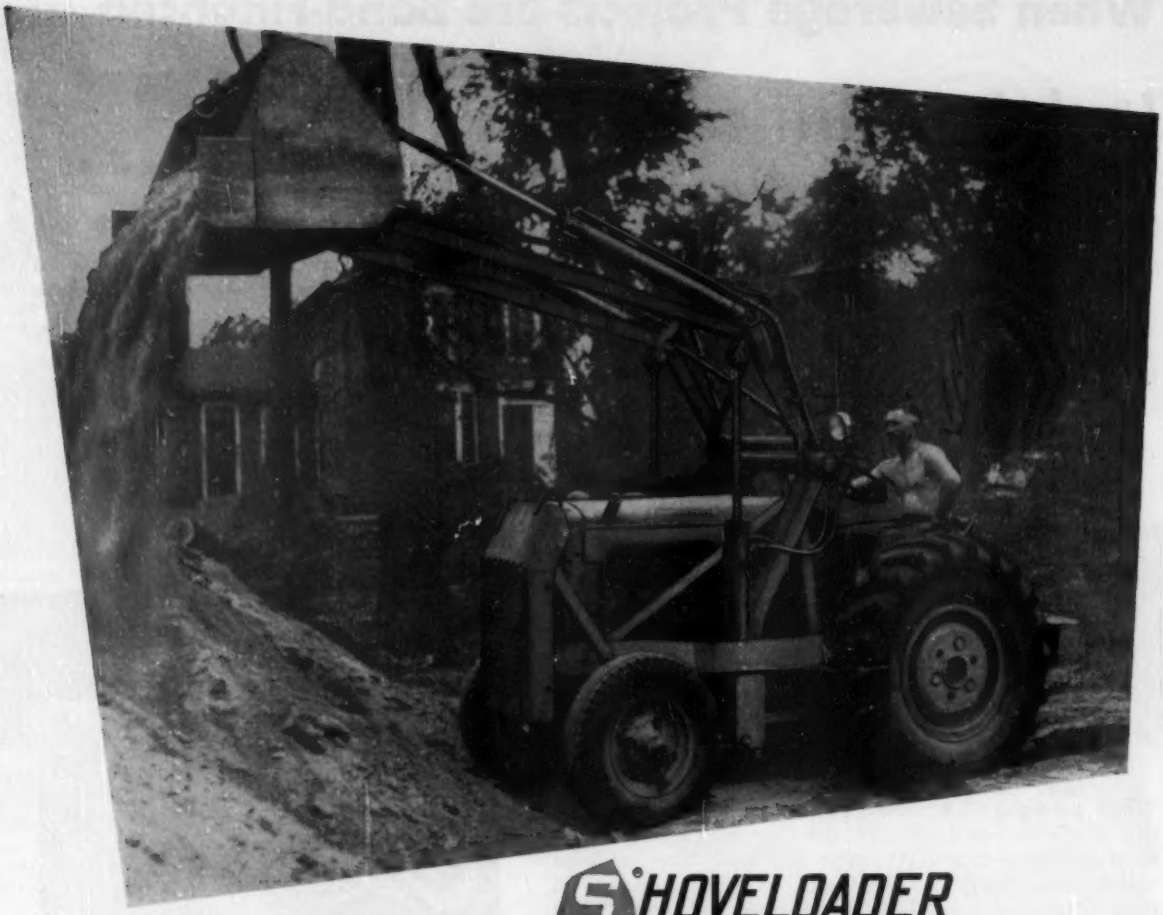
The $27 million bond issue launched by the city of Miami will cover long-needed sewerage improvements that will require hundreds of thousands of feet of Vitrified Clay Pipe. In the 79th St. installation shown here—a small part of the overall project—some 12,000 feet of Clay Pipe were installed. City of Miami officials who directed various phases of this project are: Engineer Arthur E. Darlow, Inspector Frank Allen, and Supervisor of Sewer Design W. B. Lewis. Under the direction of General Contractor Joe Reinertson, Inc., were Design Engineer W. T. Eefting, Job Superintendent Tom Bryson, and Superintendent of Construction Inspection Fred Righter.

Vitrified
CLAY
CLAY DUCO NEVER WEARS OUT!
PIPE

C-154-1

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1520 18th St. N. W., Washington 6, D. C.

206 Connally Bldg., Atlanta 3, Ga.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio



SHOVELOADER

saves Cedar Rapids Taxpayers $150 per day during Spring Clean-up

It used to take 4 crews of 3 men each with hand shovels to keep four trucks loaded with debris and refuse from Cedar Rapids' streets during the Spring clean-up season. Today one man on a SHOVELOADER replaces these twelve men, the trucks are used more efficiently, and the city saves at least $150 per day.

The versatile SHOVELOADER cuts the city's operating budget in many other ways, the year round. All summer it picks up and loads sweeper piles from the streets. In fall it is kept busy with general pick-up and leaf clean-up. In winter it is used for efficient snow removal.

Recently a tornado blew over many trees. SHOVELOADER went to work immediately pulling stumps (by hooking a chain to a welded eye at the rear rim of the bucket) and loading branches, logs and stumps onto trucks. "This unit has really paid for itself" says John Storey, street commissioner.

Use the handy coupon at left, or contact your nearest Case, Minneapolis-Moline or Sheppard Diesel tractor distributor for complete information. The BAKER-LULL Corporation, 358 West 90th Street, Minneapolis 20, Minn.

THE BAKER-LULL CORPORATION,
358 West 90th Street • Minneapolis 20, Minn.

Please send illustrated specification bulletin AD-32B describing the SHOVELOADER tractor attachment.

NAME.....

COMPANY.....

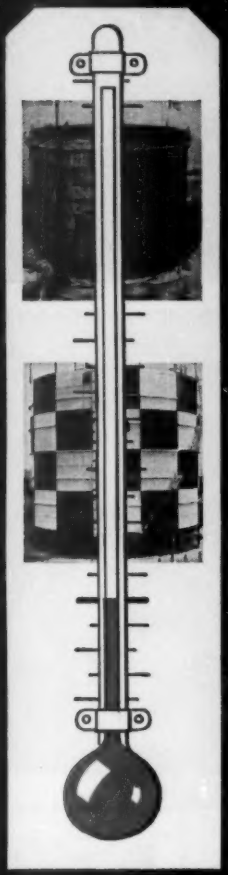
ADDRESS.....

CITY.....STATE.....

Baker Lull
handling equipment

SHOVELOADER

from the **ARCTIC** to the **TROPICS**



more than

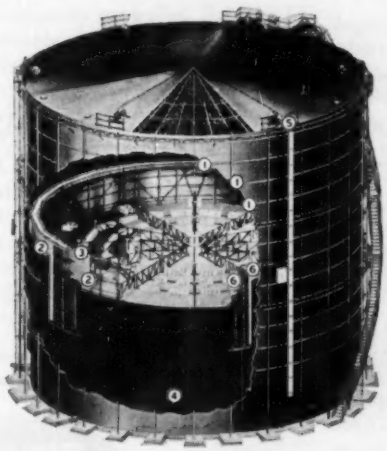
130

WIGGINS GASHOLDERS have eliminated operating costs for users of chemical process and industrial gases

This 100% dry seal gasholder (no water, no tar, no grease) has proved itself under every condition of climate and temperature. Because of the seal and the simple operating mechanism, operating costs have been entirely eliminated. Comparison of maintenance expense by owners of Wiggins gasholders also shows remarkable savings. Companies who have converted old-type gasholders to the Wiggins advantages have been able to enjoy similar savings. Write for information.

PISTON RISES NEARLY TO TOP—MINIMUM OF WASTE SPACE CAN BE BUILT ANY SIZE • NO CONTAMINATION OF GAS

1. Space above piston completely ventilated
2. Wide clearances simplify operation.
3. Gas-tight frictionless seal not affected by weather.
4. Piston rests on bottom when empty—less than ½ of 1% dead space for purging.
5. Leveling device—independent of side wall—keeps piston level.
6. Fenders prevent all tension in seal.



Wiggins Gasholder

by GENERAL AMERICAN

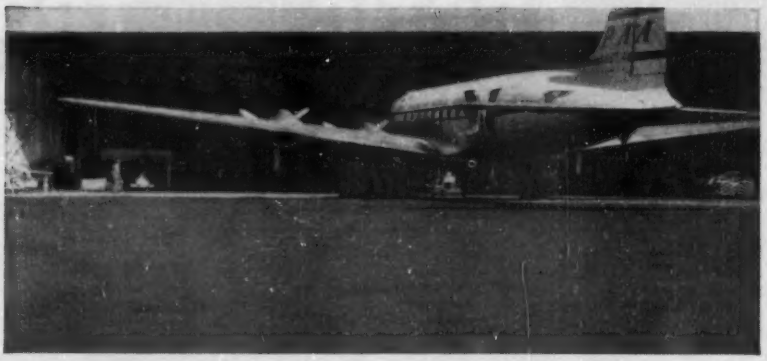
WIGGINS VAPOR SEALS
GENERAL AMERICAN
TRADE MARK

General American Transportation Corporation
135 SOUTH LA SALLE STREET • CHICAGO 90, ILLINOIS

Offices in Principal Cities

Export Dept.: 380 Madison Avenue, New York 17, N. Y.
Plants: Birmingham Ala. • East Chicago, Ind. • Sharon, Pa.
In Canada: Toronto Iron Works, Ltd., Toronto, Ontario

Aircraft fueling area sealed for less than 6¢ per sq. ft.



...with COLFIX® JET SEAL

10,000 sq. yds. of Hanger Apron and Fueling Area for Pan American Airways Corporation at the Seattle-Tacoma International Airport were recently sealed with Colfix Jet Seal—for protection against wear, weather and solvent action of fuels.

This job was let at a contract price of under 6¢ per sq. ft. Work began with cleaning of the area, followed by a rapid squeegee and broom application of diluted Colfix Primer. This method assures good bond even to a dusty surface, and gives added insurance against fuel transmission in vapor form.

Seal Application

Following the prime, Colfix Jet Seal, mixed with some water to free-flowing consistency, was applied with rubber-faced squeegees. Three applications were made in order to get smooth, uniform coverage of one quarter gallon per square yard (based on the material as received in the container). Each squeegee application was brushed immediately and the area opened to traffic as soon as the Jet Seal had set.

For Safety . . . and Long Life

Colfix Jet Seal embodies a coal tar base and oil-proof elastomers that provide an enduring solvent-resistant seal for all bituminous pavements. Its value has been proved on numerous airport runways, parking areas and hard-stands where it effectively protects these surfaces against the solvent action of gasoline and aircraft fuels. In addition, it provides a durable, skid-proof surface that resists heat and weathering.

Colfix Jet Seal is a "bodied" product that fills surface voids. It requires no sand cover. Jet Seal is one of the easiest materials to apply by squeegee, brush or industrial spray equipment. It sets rapidly and the sealed surface may be opened to traffic with a minimum of delay.

For full information on Colfix Jet Seal call our office nearest you.

Here's another typical Colfix Jet Seal job at Baltimore's Friendship International Airport.

Colfix Jet Seal is made by the makers of Walk-Top and Wearcoat—protective coatings for Playgrounds and Tennis Courts used successfully for over 20 years.

AMERICAN Bitumuls & Asphalt COMPANY

200 BUSH STREET, SAN FRANCISCO 4, CALIFORNIA

E. Providence 14, R. I. Perth Amboy, N. J. Baltimore 3, Md. Mobile, Ala. Columbus 15, Ohio
Tucson, Ariz. Seattle, Wash. Baton Rouge 2, La. St. Louis 17, Mo. Inglewood, Calif.
Oakland 1, Calif. Portland 7, Ore. Washington 5, D. C. San Juan 23, P. R.

Speed and simplify all your tax accounting

with this

BURROUGHS TAX ACCOUNTING MACHINE

It computes . . .
as it types . . .
as it posts!

The Burroughs Tax Accounting Machine offers you the most practical and satisfactory means of automatic mechanization in tax accounting. In *one operation* it will multiply; compute and total tax installments; write records, tax receipts, bills; accumulate column totals.

This Burroughs is the only typewriter-accounting machine with direct multiplication. The operator simply enters each valuation. The machine *automatically* multiplies it by the tax rate, computes the answer to the nearest cent and *posts factors and answer* to tax bill, receipt and tax record. The tax rate can be changed instantly. These automatic Burroughs features eliminate much work and virtually eliminate the chance for human error.

For Today and Tomorrow

Here is a machine that performs an amazing variety of bookkeeping operations and produces tax records with infinite variations . . . it will be of just as much value to you tomorrow as it is today. It has the flexibility to handle *all* of today's tax accounting complexities. It will easily be adaptable to any possible future changes in tax accounting methods or procedures.

Find out how Burroughs Tax Accounting Machines can help you. Just call your local Burroughs office or use the coupon.

MAIL THIS COUPON for your copy of "New Speed, Ease, Simplicity in Tax Accounting." It explains in detail the versatility and flexibility of Burroughs Tax Accounting Machines.

Mail this coupon!

Burroughs Corporation AO-48
Detroit 32, Michigan

I would like to see a copy of "New Speed, Ease, Simplicity in Tax Accounting."

Name_____

Department_____

Street_____

City_____ State_____

WHEREVER THERE'S BUSINESS THERE'S

Burroughs

Metcalf
UNIFORM
FABRICS
Standard fabrics for over eighty years
WHEN BUYING A UNIFORM . . . LOOK FOR THE TRADE-MARK ON THE BACK OF THE FABRIC
UNIFORM CLOTH
METCALF BROS. & CO. INC.
THIS SEAL IS YOUR GUARANTEE OF UNIFORMITY IN COLOR AND SERVICE
SPECIFY
386
STANDARD SERGES FROM 12 TO 20 OZ.
STANDARD TROPICALS FOR SHEETS
A3 In Number 386 Quality
ALSO, OVERCOATINGS
IN 20 AND 30 OZ. WEIGHTS
ELASTIQUES
Sample Brochure Upon Request
METCALF BROS. & CO., INC.
45 EAST 17th STREET, NEW YORK CITY
FOR UNIFORM SATISFACTION

Announcing

ORTHOSOLV*

...the Emulsifiable Orthodichlorobenzene

For Suppressing Objectionable Odors!

For Effective, Efficient, Economical Deodorizing of

- LAND FILLS
- SEWAGE PLANTS
- DRAINAGE DITCHES
- STORM SEWERS
- MARKET AREA STREETS
- REFUSE CANS and TRUCKS

Can Be Used With:

- STREET FLUSHERS
- PRESSURE PUMPS
- HAND SPRAYERS

. . . or wherever you've got an objectionable odor problem!

Now available for the first time—*at a practical price*—an orthodichlorobenzene that is readily emulsifiable in water!

ORTHOSOLV is the simple, inexpensive way to overcome complaints resulting from temporary or regular odor conditions. Mix ORTHOSOLV and water in proportions as dilute as 1 part ORTHOSOLV to 100 parts of water.

ORTHOSOLV is simple to prepare—just mix with water and it's ready for use. A solution of ORTHOSOLV can be applied by unskilled labor without any special equipment, experience or knowledge. Most localities can use their present equipment without making any large initial investment.

For Tar and Grease Removal

ORTHOSOLV is an efficient solvent for tars and greases. Can be used to clean equipment and garage floors. ORTHOSOLV is easily removed by flushing with water or steam-jennies.

TEST SAMPLES AND LITERATURE AVAILABLE AT NO COST OR OBLIGATION!

Write today for complete details on how ORTHOSOLV can quickly, easily and economically rid your community of odor problems.

*Trade Mark

SOLVAY ORTHOSOLV

Allied Chemical

A Better America Through Chemical Progress

CHEMICAL PROGRESS WEEK
May 17-22, 1954

GET ALL THE FACTS—MAIL COUPON NOW!

SOLVAY PROCESS DIVISION, ALLIED CHEMICAL & DYE CORPORATION
61 Broadway, New York 6, N. Y.

Gentlemen: Please send me the following:

☐ FREE TRIAL SAMPLE OF ORTHOSOLV
☐ Complete information and prices on ORTHOSOLV

Name_____

Company_____

Position_____

Address_____

City_____ Zone____ State_____

DO-5

Digs trenches at 17½ FT. PER MIN.

MOBILE TRENCHER . . . Here's the answer to widely-scattered city trenching jobs. Parsons rubber-tired 88 Trenchmobile® drives anywhere, cross-town, through traffic, at road speeds up to 12.6 m.p.h. There's no waiting for trailer . . . no loading or unloading delays. It maintains fast "work-and-run" schedules on service connections, mainline extensions, underground cables, conduits, sprinkling systems. Digs up to 14½ feet of trench per min., 8 to 16 in. wide, 5 ft. deep. Also has optional backfill blade.

. . . . . .

Send to: PARSONS COMPANY, Newton, Iowa
for bulletins on: ☐ 88 Trenchmobile ☐ 202 Trenchliner

NAME .....

TITLE .....

STREET .....

CITY, STATE .....

CP379REV-AC

PARSONS 202 *wheel-type* Trenchliner®

combines big work capacity with precision grading accuracy . . . assures fast, low-cost completion of municipal water and gas systems, drainage and other utility trenching projects. Take a look at its wide range of digging feeds, widths and depths:

With 30 digging feeds up to 17½ feet per minute, you get maximum trench production at every depth, width, and in all soil conditions. There are 15 cutting widths, from 13 to 31 inches. Maximum digging depth is 6 feet. Heavy-duty digging wheel takes either square or round-bottom buckets. Quick-change bucket fronts have cutting lips, or "Tap-In" teeth.

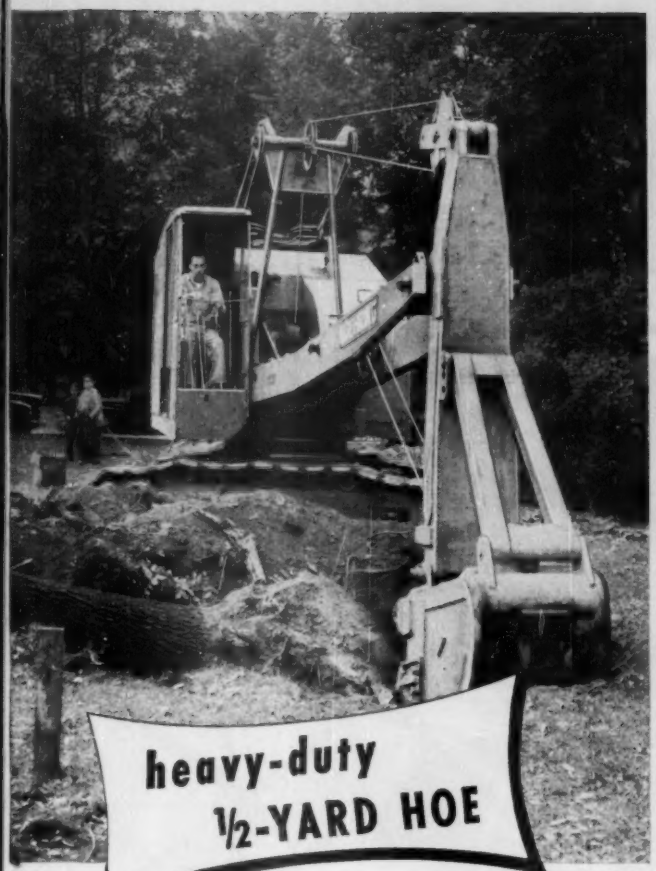
Specified grades are easy to maintain because digging wheel responds instantly to friction-clutch control. Hinged crumber sweeps trench bottom clean, ready for pipe. Shiftable, reversible belt conveyor discharges excavated material to either side of machine. Get more details from Parsons distributor, or write us.

PARSONS

COMPANY • NEWTON, IOWA

(Koehring Subsidiary)

Also: larger Trenchliners . . . wheel-types, ladder-types, full crawler mounted



heavy-duty 1/2-YARD HOE

With long, deep reach — 17¾ feet below tracks — and fast, clean dump, this Koehring ½-yard hoe delivers big output on basement excavations, footings, water and gas main trenches, storm sewers and other below-grade excavations. Heavy-duty boom resists side-sway — holds the line in toughest digging. Dipper won't turn away from the cut because wide boom-point provides a rigid connection to the dipper arm — gives straight, clean cut.

Digging angle of the hoe dipper is easily changed to best suit the type of material, and cut being made. Three settings are provided by adjusting-links on the dipper arm. During the dig-and-swing cycle, the close-coupled dipper pulls up tight to boom, avoids spillage as boom is raised.

Converts to ½-yd. shovel, ½ to ¾-yd. clamshell or dragline, 10-ton crane. Also available as 15-ton truck crane. Ask Koehring distributor for details. Other sizes to 2½-yds., lift capacities to 79½ tons.

KOEHRING
COMPANY • MILWAUKEE 16, WIS.
Subsidiaries: KWIK-MIX • JOHNSON • PARSONS

portable BITUMINOUS MIXER

As a portable mix plant mounted on pneumatic tires, this versatile Kwik-Mix Bituminous Mixer is easily towed to the job, gives "curb service" mixing anywhere around town. It does direct pouring on street patchwork, loads wheelbarrows. For stockpiling materials, or loading batch into trucks from ground level, mixer with tower attachment (optional) gives you discharge heights up to 8¾ feet. Both sizes of mixers (10 and 14 cu. ft.) also are readily adaptable as stationary overhead plants, mounted on skids.

Even-texture mix is assured every batch by pug-mill mixing action and uniform bitumen distribution. For complete mechanical details and more cost-cutting ideas, contact your Kwik-Mix distributor, or write us for Bituminous Mixer catalog.

Also ask about Kwik-Mix 3½ to 16 cu. ft. Dandie Concrete Mixers, and low-cost Moto-Bug® — the 10 cu. ft. power wheelbarrow for low-cost material handling.

KWIK-MIX
COMPANY • MILWAUKEE, WIS.
(Koehring Subsidiary)

Rotary Snow Plow
Fork Lift
Bulldozer Blade
Crane Hook
V-type Snow Plow
Pusher Plate
Winch

Back Hoe

Operator Cab

attachments

—a big PAYLOADER® plus

Scarifier

Rigid and Reversible trip-blade Plows

"PAYLOADER" tractor-shovels equipped with standard buckets are extremely versatile. But the wide variety of available attachments greatly increases "PAYLOADER" usefulness and investment value — enables them to be profitably employed more days in the year.

So first choose the tractor-shovel that just *fits* your needs from the "PAYLOADER" line. It's the *one* complete line — seven *proven* models from 12 cu. ft. to 2 cu. yd. bucket capacity. Afterwards, you can acquire any of the special attachments, when and as you need them.

Your nearby "PAYLOADER" Distributor is ready to help you choose the model and attachments that best fit your needs. He also has the parts and service facilities to keep your "PAYLOADER" profitably productive. The Frank G. Hough Co., 710 Sunnyside Ave., Libertyville, Illinois.

WRITE FOR FREE INFORMATION *on any "PAYLOADER" you are interested in: four-wheel-drive, rear-wheel-drive, front-wheel-drive — 12 cu. ft. to 2 cu. yd. bucket capacity.*

PAYLOADER®

HARLEY-DAVIDSON Servi-Car

Protects residential areas

Prevents lawbreaking

Unequaled patrol for residential beats

THE Harley-Davidson Servi-Car keeps the mounted officer out in the open . . . where the sight of his blue coat and brass buttons makes motorists "toe the line" and nips criminal activity in the bud. *Speedy* . . . this rugged workhorse covers a beat fast, slips down side streets and alleys to any part of a beat in a hurry. *Convenient* . . . the officer has full visibility for a better chance to anticipate and cope with any situation. *Efficient* . . . one officer does the work of two, covering the beats with the thoroughness of men on foot, yet motorized to move in a hurry.

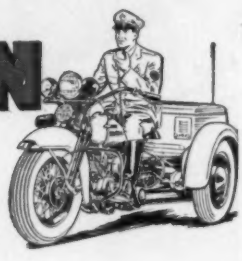
The Servi-Car is compactly designed and sturdily built from the ground up to give you dependable service . . . wherever you use it. Ask your dealer for complete information. For valuable illustrated booklet, "More Effective Police Power," write us today.

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin

HARLEY-DAVIDSON

Motorcycles **POLICE** Servi-Cars

BETTER TRAFFIC CONTROL



NATION NEEDS MORE ROADS!

TRAFFIC LOADS, SPEEDS BEING STEPPED UP!

GRAVEL SUPPLY SHORT IN MANY AREAS!

COSTS GOING UP!

Yes, the **PRESSURE** is on . . . **YOU!**

PLAN NOW . . . Better Stabilization . . . of Bases, Surface Shoulders . . . for a Total Cost of 5¢* per Square Yard with

STERLING ROCK SALT

"NATURE'S OWN SOIL STABILIZER"

STERLING ROCK SALT keeps your road mix "alive" . . . able to adapt itself and compensate quickly for excessive moisture or dryness, and sudden temperature changes. Water swells clay. But, in heavy rains, salt changes to brine, preserving the bond. In dry spells, salt crystallizes at the surface, preventing the clay binder from drying up.

Rock salt is soil's "thermostat" — the *natural* ingredient that keeps aggregates, fines and clay together in year-round permanence. Order your spring needs NOW or, for more information, send coupon.

**Actual cost-check from Hancock County, Ill.—$.0464*

INTERNATIONAL SALT COMPANY, INC.
INDUSTRIAL DIVISION, SCRANTON, PENNSYLVANIA

Get FREE Bulletins . . . "Better Highways Through Salt-Soil Stabilization"

Application methods and operational procedures . . . plant and road mixing . . . storage and handling hints . . . a wealth of helpful, practical on-the-job information.

IMPORTANT COUPON—MAIL TODAY

INDUSTRIAL DIVISION, DEPT. AC-5
INTERNATIONAL SALT COMPANY, INC., SCRANTON 2, PA.

☐ Please have representative call. ☐ Send complete file of "Better Highways" bulletins.

Name _____

Company _____

Address _____

City _____ *Zone* _____ *State* _____

RUST-PROOF, NO PAINTING
MAINTENANCE-FREE
FIRST COST IS LAST COST

COST? IN MOST CITIES,

Nichols NEVER-STAIN Aluminum Chain Link Fencing costs only about 15% more than ordinary fencing on the complete installation.

This slight differential is more than offset the first time an ordinary fence is painted—usually within five years.

The ideal fence for . . . **PARKS, GARDENS, POOLS, STORE AND EQUIPMENT AREAS, ETC.**

No other type of fencing in this price range offers all of these advantageous economical features. The savings in painting alone will soon pay for the fence itself. Here is modern fencing that enhances the appearance of any property or site. Write for complete descriptive brochure — address Dept. ACM.

NICHOLS WIRE & ALUMINUM CO.
GENERAL OFFICE & FACTORY — DAVENPORT, IOWA

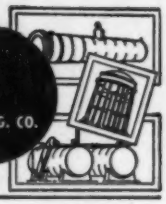
FOR almost a century Cole elevated tanks have provided a dependable water supply for mills and communities. Cole quality is assured by careful, experienced designing and watchful supervision from blueprints to finished tank. Send us your inquiries for tanks from 5,000 to 2,000,000 gallons — stating capacity, height to bottom, and location. *Write for latest Cole catalog — "Tank Talk."*

98 YEARS OF EXPERIENCE IN BUILDING TANKS

Established 1854

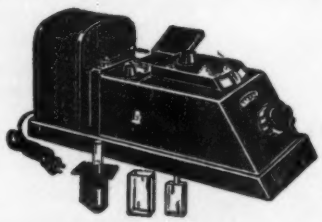
R. D. COLE MFG. CO.
NEWNAN, GEORGIA

ELEVATED TANKS • VESSELS • CYLINDERS
TOWERS • BINS • STANDPIPES



KLETT SUMMERSON ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

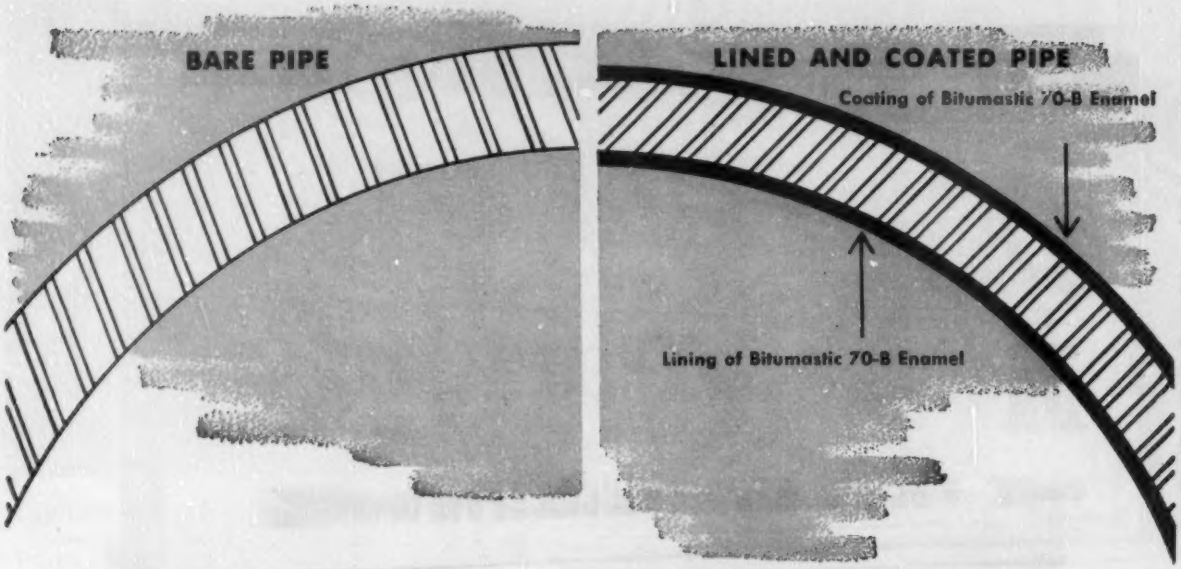
KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.

. . . a sign of progress

The on-street parking meter system at Davenport, Iowa, started in 1949. It has, 1) provided increasingly efficient traffic regulation and, 2) produced revenue to develop metered parking lot facilities adjacent to the business district as shown below. What Davenport has accomplished with approximately 1,500 meters should be significant to progressive officials who contend with a parking problem.

Ask us to study your situation . . . no obligation

Mayo-Hale
PARK-O-METER COMPANY
OKLAHOMA CITY, OKLAHOMA



It takes less wall thickness

when you protect steel pipe with Bitumastic® 70-B Enamel

BITUMASTIC 70-B ENAMEL—when applied to a thickness of approximately 3/32"—protects the exterior of pipe from the corrosive action of the soil in which it is buried. It is much more economical to use this protective coating than to specify pipe with greater wall thickness in order to allow for future corrosion.

For instance, if it were calculated that a 3/8" wall would provide sufficient structural strength for a given pipe line, it would be unnecessary to specify a 5/8" wall to compensate for corrosion. The use of Bitumastic 70-B Enamel would do away with the need for the additional 1/4" of steel—a substantial saving.

Besides specifying less wall thickness, you can use *smaller* pipe by applying Bitumastic 70-B Enamel to the interior. A spun lining of this coal-tar base Enamel *keeps* flow capacity high. So you don't have to buy *over-sized* pipe to allow for future "shrinkage" due to tuberculation and incrustation.

Give your community this two-way savings on your large-diameter water lines by specifying strong, durable steel pipe, lined and coated with Bitumastic 70-B Enamel. If you wish, we will handle the entire coating job for you. Write to us for full information.

BITUMASTIC PROTECTION 100TH Anniversary 1854 1954

KOPPERS BITUMASTIC ENAMELS
REG. U.S. PAT. OFF.

KOPPERS COMPANY, INC., Tar Products Division, Dept. 522-T, Pittsburgh 19, Pennsylvania

DISTRICT OFFICES: BOSTON, CHICAGO, LOS ANGELES, NEW YORK, PITTSBURGH, AND WOODWARD, ALA.

14 Etnyres lay the dust in Houston!

Houston has taken to Etnyre Flushers like ducks to water. Not only are fourteen Etnyres now in operation by the Street Repair & Cleaning Div., Dept. of Public Works, but two Etnyres are used by the Fire Department to extinguish grass fires.

During the daytime, the Etnyres are put to work wetting down shell roads to eliminate dust, or as a preparation for grading. Or, when the stadium is in use for football games, the parking lot (see above) gets treatment to lay the dust. Or the Etnyres may be sent out to clean sewers and culverts

At night the fleet flushes city streets to keep them clean, cool, and sanitary. One major advantage of using flushers for this purpose is their ability to clean streets irrespective of parked cars.

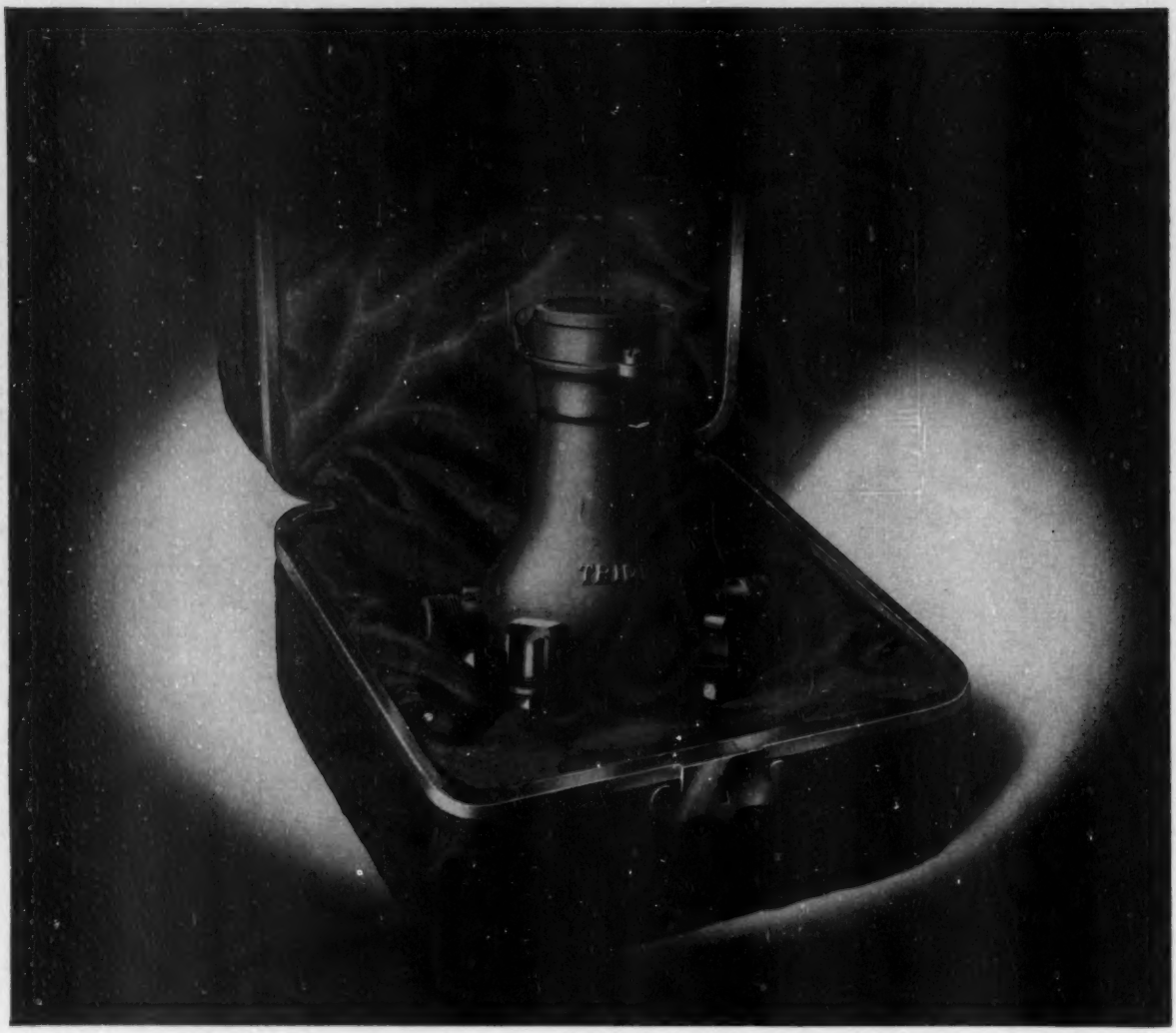
A far cry from the gravity feed sprinklers originally used by the City of Houston, the Etnyres of today operate with a minimum of maintenance. Operators have no frame trouble, no breakdowns —servicing is largely comprised of removing sticks, stones, and trash which are drawn in from the water supply.

Etnyre, "The Machine of a Dozen Uses," can improve sanitation in your city . . . make it a better place in which to live . . . bring smiles to the faces of taxpayers. Get latest data and prices from your nearby Etnyre dealer, or write us.

SEE YOUR ETNYRE DEALER!

ETNYRE
Street Flushers
"THE MACHINE OF A DOZEN USES"

E. D. ETNYRE & CO., Oregon, Ill.



SOME THINGS *Can't* BE MEASURED

A man can measure the accuracy of a Trident meter. He can check for himself its workmanship, have its materials tested, test the ease of assembly and disassembly.

But some things can't be measured. For instance, the kind of friendly informative service that a Neptune salesman gives his customers . . . service that has brought many of them official awards from the water works field.

Or Neptune's 50-year record of continuous interchangeability, proof for the future that your Tridents won't become obsolete, can always be made modern.

Or just the fact that Tridents have *always* been the standard by which meter performance has been measured.

When you buy Tridents, you buy over 50 years of sustained accuracy, continuous improvement, and quality performance.

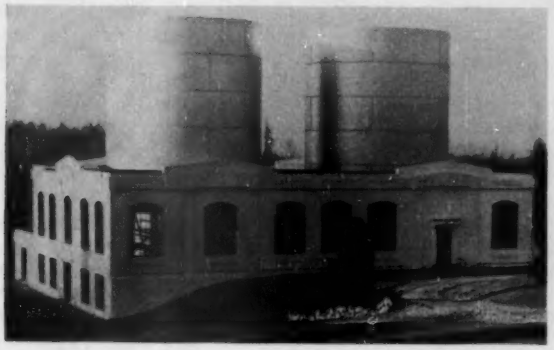
NEPTUNE METER COMPANY
50 West 50th Street, New York 20, N.Y.

NEPTUNE METERS, LTD.
1430 Lakeshore Road, Toronto 14, Ontario

Branch Offices in Principal American and Canadian Cities

250

neptune



Storage is provided by an elevated tank which holds 1,000,000 gallons and a reservoir which holds 58,500,000 gallons.

The water flows from the headworks to a control station with twin surge tanks, then passes into four separate pipelines.

Seattle's Mountain Water Supply

By ROY W. MORSE
Superintendent of Water
Seattle, Wash.

THE WATER DEPARTMENT of Seattle, Wash., host to the annual conference of the American Water Works Association to be held this month, could, with pride, conduct visiting water-works engineers and officials on a tour of one of the most beautiful watersheds in the country. The 627,000 people served by the Seattle system get their water from

Seattle collects its water at this picturesque headworks on the Cedar River, snow covered when this photograph was taken.

Every service in Seattle is metered. Meters are tested for accuracy regularly.

the Cedar River, a 40-mile-long mountain stream that rises in the Cascade Mountains, 45 miles southeast of the city's center. The river flow at the intake averages 627 mgd (million gallons daily).

The watershed covers 92,000 acres, of which 65,000 are owned by the city. Logging is permitted in this area, under the strict control of the Water Department.

The mountain-pure water needs no further treatment other than a small amount of chlorine (0.35 ppm) and ammonia (0.078 ppm), applied as a precautionary sanitation measure. The Water Department makes residual chlorine tests at the control works every two hours throughout the year.

Four gravity supply lines, varying from 42 to 66 inches in diameter, bring the water to the city. These lines have a combined capacity of 205 mgd. The maximum, single-day demand of the system came remarkably close to this peak on July 11, 1951, when it hit 202 mgd.

This set of transmission lines delivers the water to a set of secondary storage reservoirs within the distribution system. There are 24 storage units including reservoirs, standpipes, and tanks, which provide a combined total capacity of 358,000,000 gallons.

The system that receives the water from these storage tanks contains 1,209 miles of pipe, 84% of which is cast iron, and the standard size of which is 8 inches. The system includes 11,942 hydrants, 10,590 gate valves, and 136,424 services, all metered.

Right Tank—Wrong Place

DELRAY BEACH, FLA. has a 23-year-old R.D. Cole elevated tank of 100,000 gallons capacity that had only one thing wrong with it—it was in the wrong place.

In the past eight years, the population of Delray Beach has grown so substantially that it now numbers 6,500 residents. The new settlers in this southeastern Florida city have become enthusiastic customers of the municipal water works. A daily water use of 400 gallons per person is more usual than not. Consequently, the stress on the system developed weaknesses that were not anticipated when the tank was built.

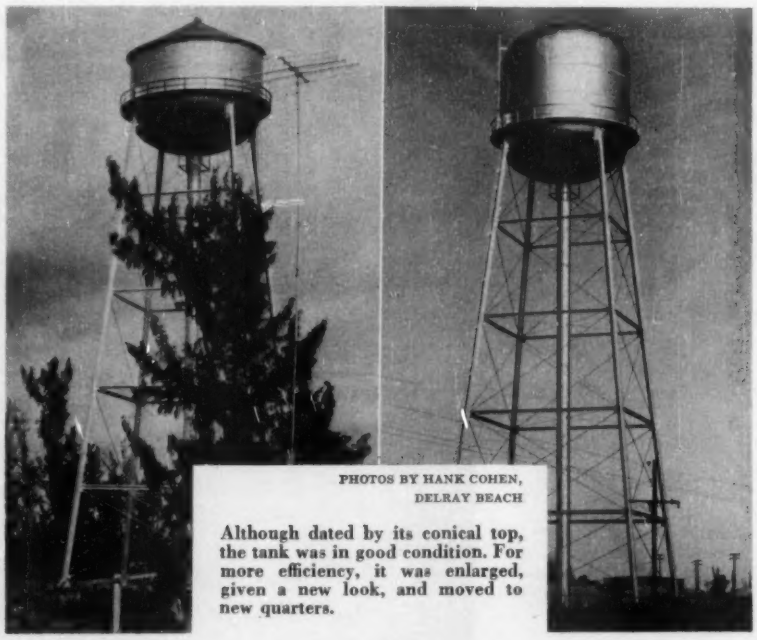
It was apparent that the tank could better serve the city in another location. So it was moved to the north end of the city, where it is in better shape than it ever was before. It has been redesigned, legs and braces have been strengthened for greater stability, and the capacity has been enlarged to hold 130,000 gallons instead of only 100,000.

The shift of this tank is only one phase of Delray Beach's over-all water-works improvement. Today, the city has three new wells. Each well is of the gravel-packed type and is approximately 90 feet deep, uses a 20-inch sand casing and a 12-inch well casing, and is equipped with a 10-inch screen. Two wells utilize 1,000-gpm Peerless turbine-type pumps. The third will be equipped with a 700-gpm Byron Jackson submersible pump which was selected because the well was drilled in the backyard of a residence on the condition that no pumphouse would be erected.

The three pumps transfer the water through aeration facilities to a ground storage reservoir. The high-service pump station is equipped with Fairbanks-Morse centrifugal pumps which have a combined capacity of about 7 mgd.

The entire water improvement included numerous extensions and additions to the distribution system and an underwater crossing of the Florida intracoastal waterway. For this underwater crossing, the city used American Cast Iron Pipe Company Mo Lox ball-and-socket bolted pipe. It is easily adaptable to slight deviations in underwater trenching, both in alignment and elevation. Everdur bolts were used in the bolted joints. A diver inspected each joint after the pipe was placed in position in the trench.

The water improvement was designed by Smith and Gillespie, Jacksonville consulting engineers, and built during the administration of Mayor R. J. Holland. Robert A. Lovelace is city manager.



PHOTOS BY HANK COHEN, DELRAY BEACH

Although dated by its conical top, the tank was in good condition. For more efficiency, it was enlarged, given a new look, and moved to new quarters.

Uncooperative motorists crippled the street-sanitation program in Evanston.

Temporary parking restrictions during daylight hours resulted in excessive violations and an impractical solution to mechanical street-cleaning. Nighttime parking bans have successfully enlisted the cooperation of most vehicle owners.

The System Works Best At Night

Evanston, Ill., finds that parking bans on alternate sides of the street to aid street sweeping work best when limited to night hours

By JOSEPH L. ROSE
Commission of Public Works
Evanston, Ill.

NO ONE questions the fact that modern, high-speed, large-hoppered mechanical street sweepers can keep streets clean at low cost if they can function on streets that are free of parked cars. The trick is to find some way of getting a city's vehicles away from the curbs without giving a summons to everybody in town.

In Evanston, confronted with the problem of dealing with 25,000 vehicles, we believe that we have not only found the answer, but have enlisted the willing cooperation of the public. We drafted an ordinance which the police can enforce without making excessive arrests, and which the Public Works Department finds practicable.

Nighttime Parking

The Evanston ordinance provides for a parking ban on alternating sides of the street, effective from 2:00 a.m. to 6:00 a.m.. On odd-numbered dates of the month, cars may park on the side of the street bearing odd house numbers. On even-numbered dates, the cars switch to the even-numbered sides of the streets.

For three years before the adoption of this ordinance, we had tried, without success, to use the system now in effect in New York City. This requires 12- to 24-hour advance posting of certain streets with temporary *No Parking* signs during the day. We found that we always had enough violators to seriously impair the efficiency of this method. In addition, maintenance costs by this method were high.

Nevertheless, we wanted the economy of mechanical street sweeping, so we modeled our ordinance after one now in use in Milwaukee, where officials have expressed satisfaction with its results.

Both citizens and officials expressed doubt that the plan would work. Police officials had anticipated issuing 1,000 arrest tickets on the first night of the ordinance's enforcement. To forestall this development, we embarked on an active program of publicity and education, including notices in the newspapers, signs, announcements, and an individual letter to each vehicle owner.

This approach paid dividends. On the first night, the police issued only 185 arrest tickets. On the second night, the number dropped to 80, and on succeeding nights, it reached a maximum of 50 violations. Now, many cars are off the streets entirely during the night.

Cleaner Streets Appreciated

The chief dividend, however, has been the end of debris-cluttered streets. We have received many favorable comments from residents who are pleased with the sanitary condition of the city's streets. Streets in densely populated sections, which had not been cleaned in a couple of years and where debris had collected to a depth of 3 to 4 inches because of bumper-to-bumper parking, night and day, are now clean. Our Street Department has been able to more than double the mileage of gutters cleaned per shift as a result of the ready and free access to the curbs in the congested parking areas.

Free access to the curbs also is of paramount importance for good snow-plowing results. Plowing close to the curb fully maintains our traffic and parking lanes.

Modern Water Rates

PART 1

THE AMERICAN CITY again begins a series of water-rate analyses, which are particularly significant in today's turbulent economic era. The nation's water works, with their substantial capitalized investments that reach across at least two decades, react slowly to economic changes. Nevertheless, ballooning costs are producing their effect. This series will disclose just how marked the effects are.

These rate summaries, begun under the editorial leadership of the late Theodore Reed Kendall, engineering editor from 1920 to 1941, report not only the rates charged, but also the type of system that they support, and the size of the municipality that the system serves.

Also tabulated are essential data on metering and billing practices in each municipality, and details of fire-service charges, but not miscellaneous charges made to contractors for the use of water required by building projects, or to water users for service connections.

The series notes how much rates have advanced in recent years, and lists costs of water to users who will require 3,000, 5,000, and 10,000 gallons of water per month. This listing embraces those small and moderate users of the residential class who constitute the bulk of the water-works income producers.

Installments in subsequent issues will discuss good water-rate practice, including such topics as the reason for water meters, types of water rates, best number of blocks or steps, minimum charges versus fixed charges, out-of-city rate differentials, public and private fire-protection charges, billing procedures, and nuisance charges.

PASSAIC VALLEY WATER COMMISSION, CLIFTON, N. J.

Rates Per Month

Size of Meter (in inches)	*Fixed Charges*
⅝	$ .72
¾	.96
1	2.30
1½	5.18
2	7.49
3	18.72
4	24.48
6	48.96
8	77.76
10	95.04
12	100.08
16	201.60

Volume of Water (in cubic feet)	*Metered Charges* (per 1,000 cubic feet)
First 3,300	$1.44
Next 30,000	1.30
" 300,000	1.06
" 333,300	.77
" 333,400	.62
" 333,300	.58
Over 1,333,300	.53

Fire-Service Rates Per Year

	Public Charge
Per hydrant	$ 10.00
Plus per inch-foot of main	.0068

Service Line (in inches)	*Private Charge*
2	$ 40.00
2½	60.00
3	100.00
4	120.00
6	250.00
8	400.00

Miscellaneous Regulations

1. Users may be billed either on a monthly or quarterly basis. Quarterly meter service is triple the monthly charges; quarterly quantity schedule uses blocks also triple the size of the monthly ones.
2. There are no restrictions of any kind on the use of water.
3. Private fire service may be billed on a quarterly basis if desired.

General Data

Population served	360,000
Services (including fire supplies)	44,000
Meters	43,000
Hydrants	3,200
Miles of mains	371
Supply—river and reservoir	
Treatment: river—prechlorination, coagulation, settling, dechlorination, filtration, pH adjustment, postchlorination	
reservoir—chlorination and filtration	
Storage facilities—3,000,000-gallon clear well	
two elevated tanks totaling 250,000 gallons	
three open reservoirs totaling 263,000 gallons	
Average demand	75 mgd
Plant capacity	91 mgd

Customer's Costs Per Month

Gallons	*Cubic Feet*	*Costs*
3,000	400	$1.38
5,000	667	1.68
10,000	1,333	2.64

Remarks

1. Rates have been increased approximately 15% in the past five years.
2. The Commission distributes no free water; it meters and bills all services. When occasional surplus funds accumulate, they are distributed to the partner cities.
3. The Commission owns all meters, reading 1½% monthly and the balance quarterly. Meters 3 inches or larger are placed in sidewalk vaults. Smaller meters are located in the water user building whenever possible.
4. All ⅝-inch meters are checked for accuracy once in 12 years, or when they have registered 300,000 cubic feet. Larger meters are checked in accordance with a schedule calling for shorter time limits and larger registration limits as the meter size increases.
5. Bills are prepared on an Underwood automatic bookkeeping machine.

RICHARD E. BONYUN
General Superintendent and Chief Engineer

CARIBOU (MAINE) WATER WORKS CORPORATION

Rates Per Month

Size of Meter (in inches)	*Minimum Charges*
⅝	$ 2.20
¾	3.00
1	4.00
1½	7.00
2	11.00
3	22.00
4	33.00
6	66.00
8	110.00

Volume of Water (in cubic feet)	*Metered Charges* (per 100 cubic feet)
First 300	minimum charge
Next 2,700	$ .40
" 4,000	.30
" 26,000	.20
Over 33,000	.15

Fire-Service Rates Per Year

Service Line (in inches)	*Private Charge*
4	$ .55
6	1.20
8	2.20
10	3.40

Hydrants	*Public Charge*
93	$29,570.00
Each additional	35.00

Miscellaneous Regulations

1. Utility, at its option, may bill at quarterly rate users whose blocks are triple in quantity and whose minimum charges are then tripled.
2. Utility reserves the right to meter any fire line where it has reason to believe that water is being used for purposes other than fire protection.
3. Utility makes no restrictions on the use of water for air conditioning or lawn sprinkling.

General Data

Population served	10,000
Services (100% metered)	1,600
Hydrants	93
Valves	184
Miles of mains	12
Supply—river	
Treatment—lime, alum, carbon, chlorine, rapid sand filtration	
Storage facilities—3 standpipes totaling 1,123,000 gallons	
Average demand	1 mgd

Customer's Costs Per Month

Gallons	*Cubic Feet*	*Costs*
3,000	400	$2.60
5,000	667	3.80
10,000	1,333	6.60

Remarks

1. Rates have been increased 35% in the past five years.
2. Utility furnishes water free to municipal recreation program for skating rinks, wading pools, etc.
3. Meters are the property of the utility and are placed in the building occupied by the user. Meters are read in the business district each month.

and quarterly in all other areas. They are checked for accuracy once every five years.

4. Bills are prepared without automatic billing devices, but are addressed with the use of an Addressograph machine.

K. P. Currie
District Manager

PLYMOUTH, N. H.

Rates Per Half-Year

Volume of Water (in gallons)	*Charges* (per 1,000 gallons)
First 20,000	$15.00 (min.)
Next 80,000	.60
" 100,000	.50
" 100,000	.40
Over 300,000	.30

Miscellaneous Regulations

1. Town places no restrictions on lawn sprinkling or air conditioning.

2. Fire-service charges are made to the town on the basis of $100 per year per hydrant, and $15 per year per sprinkler system for private fire protection.

3. Town makes a minimum charge of $15 per half-year for water use.

General Data

Population served	3,000
Services (100% metered)	600
Hydrants	87
Valves	100
Miles of mains	15½
Supply—gravel-packed well	
Treatment—none	
Storage facilities—300,000-gallon prestressed concrete tank 4,000,000-gallon open reservoirs	
Average demand—168,000 gallons daily in winter; double in summer	
Plant capacity—504,000 gallons daily in winter; double in summer	

Customer's Costs Per Half-Year

Gallons	*Cubic Feet*	*Costs*
18,000	2,400	$15.00
30,000	4,000	21.00
60,000	8,000	39.00

Remarks

1. Water rates have risen 100% for minimum rates and 60% for metered rates in the past five years.

2. Municipality owns all meters which are placed in the building occupied by user.

3. No free water is distributed to any user.

4. No water funds are diverted to other uses.

5. Bills are prepared without automatic billing equipment.

Alfred J. Legasse
Superintendent of Water

GROTON, CONN.

Rates Per Half-Year

Size of Meter (in inches)	*Fixed Charges*
⅝	$ 1.75
¾	3.00
1	4.75
1½	8.75
2	14.00
3	27.50
4	44.00
6	87.50
8	140.00
10	210.00

Volume of Water (in cubic feet)	*Metered Charges* (per 100 cubic feet)
First 30,000	$ .25
Next 170,000	.19
" 1,800,000	.13
" 6,000,000	.095
Over 8,000,000	.065

Miscellaneous Regulations

1. The Borough makes a minimum charge of $6.25 plus the service charge which includes 2,500 cubic feet of water.

2. The Borough also makes a fire service charge of $76.50 per year per hydrant.

3. Borough places no restrictions on air conditioning, but is currently studying the possibility.

General Data

Population served	17,000
Services (100% metered)	1,423
Hydrants	188
Valves	383
Miles of mains	50
Supply—four impounding reservoirs with 520,000,000 gallons capacity	
Treatment—coagulation, settling, filtration, chlorination	
Storage facilities—one 1,500,000-gallon standpipe one 1,500,000-gallon covered reservoir	
Average demand	5.5 mgd
Plant capacity	6 mgd

Customer's Costs Per Half-Year

Gallons	*Cubic Feet*	*Costs*
18,000	2,400	$ 8.00
30,000	4,000	11.75
60,000	8,000	21.75

Remarks

1. Rates represent an increase of 33%, the first rise in 30 years.

2. No free water is available except to fire and street departments.

3. No water funds are diverted to other municipal uses.

4. Meters are checked once each six years or when they have registered 50,000 cubic feet. Meters, owned by the Borough, are placed in meter boxes at the lot line or in the water users' buildings.

5. Bills are prepared on a Remington Rand automatic billing machine.

6. The Borough serves four Navy-operated housing groups totaling 2,200 units, using only five service connections. This accounts for the relatively large population, compared with the small number of services.

L. F. Dutton
Superintendent of Water

NEWBURGH, N. Y.

Rates Per Quarter

Size of Meter (in inches)	*Fixed Charges*
⅝	$ 1.00
¾	1.50
1	2.50
1¼	4.00
1½	5.00
2	8.00
3	16.00
4	25.00
6	50.00
8	80.00
10	100.00

Volume of Water (in cubic feet)	*Metered Charges* (per 1,000 cubic feet)
First 2,500	$2.10
Next 7,500	1.50
" 90,000	1.10
Over 100,000	.75

Miscellaneous Regulations

1. Water users outside the city limits pay 135% of these charges.

2. Public or private fire protection is free.

3. Unmetered hydrants outside the city limits are assessed $25 per year.

4. Air-conditioning units of 5 tons or greater capacity must use a water-reclaiming device.

5. No restrictions are placed on lawn sprinkling.

6. Water is fluoridated as a dental health measure.

General Data

Population served	34,000
Services (100% metered)	7,500
Hydrants	748
Valves	1,083
Miles of mains	71
Supply—two impounding reservoirs on a stream	
Treatment—coagulation, filtration, pH adjustment, activated carbonation,	
Storage facilities—1,800,000-gallon standpipe 200,000-gallon covered reservoir	
Average demand	3.9 mgd
Plant capacity	5 mgd

Customer's Costs Per Quarter

Gallons	*Cubic Feet*	*Costs*
9,000	1,200	$3.52
15,000	2,000	5.20
30,000	4,000	8.50

Remarks

1. Water rates have not changed for more than five years.

2. Free water is furnished to other municipal departments and a hospital.

3. Approximately 25% of the gross revenue is diverted to the city's general fund.

4. The department owns its meters. Approximately 4% are placed in a meter box at the lot line; the balance are located in the building occupied by the user. Meters are checked for accuracy once every seven years.

5. Bills are prepared on a Burroughs automatic billing machine.

John Kingsley
Superintendent and Chemist

BINGHAMTON, N. Y.

Rates Per Month

Volume of Water (in cubic feet)	*Charges* (per 100 cubic feet)
First 500	$ .90 (min.)
Next 3,500	.16
" 4,000	.14
" 8,000	.12
" 1,250,000	.09
Over 1,266,000	.07

Miscellaneous Regulations

1. Rates are increased 50% for water users outside the city limits.

2. Water users may choose to be billed monthly, bimonthly, semiannually, or annually. However, the quantity of water in each category and respective minimum charges are increased proportionately.

3. A 5% penalty is added to bills not paid by the tenth of the month.

4. Quantity of water used for air conditioning units is not restricted.

5. Temporary restrictions were placed on lawn sprinkling for two weeks in 1953.

6. No charge is made either for public or private fire protection.

General Data

Population served	95,000
Service (95% metered)	15,447
Meters	14,737
Hydrants	1,355
Valves	3,330
Miles of mains	150
Supply—river	
Treatment—rapid sand filter with alum, lime, chlorine, chlorine dioxide, carbon	
Storage facilities—10,750,000-gallon covered reservoir	
Average demand	9.5 mgd
Plant capacity	20 mgd

Customer's Costs Per Month

Gallons	*Cubic Feet*	*Costs*
3,000	400	$ .90
5,000	667	1.22
10,000	1,333	2.18

(*Continued on page* 163)

By A. C. DAVIS
Town Manager
*Hartford, Vt.**

A Small Town Labor Saver

Loading is only one task that this multipurpose unit performs.

Hartford, Vt., equips its water, sewer, street, and snow-removal crews with a single, versatile, multiduty unit

FOR YEARS, we have felt that services rendered by various town departments could be improved if we could find the right equipment at the right price. From a population standpoint, our town is small (according to the 1950 census, Hartford numbers less than 6,000 people). Nevertheless, we conduct a substantial amount of construction and maintenance work, enough to keep a crew of 12 men busy on a full-time basis. We have felt the need for additional equipment, but each time that we have estimated the costs of the various machines, we have come up with a capital investment figure too large to be justified by our work load and our budget.

For a long time, we have needed a compressor. We have managed by renting a machine when one was available, which sometimes meant a delay in emergency work and always meant the problem of finding a rental compressor and paying for its transportation.

When sewer and water connections, sewer- and water-main repairs, or culvert installations were made, it meant pulling workmen from important jobs to do the necessary excavation work.

Problems of Excavation

Loading sand in the winter necessitated manual labor, also. When bad storms prevailed, icy roads were not satisfactorily sanded for two or three days. The number of loads of sand which can be spread during the first hour of need is what determines the efficiency of the service, particularly on heavily traveled streets and highways.

Picking up stones and dirt scraped from town road ditches is also a tedious hand-labor job. Frequently, it was not done because we did not have a large enough labor force.

When we learned of a machine that could cope with all these duties, we became much interested. The apparatus is a Schramm Pneumatractor that carries a compressor capable of delivering 105 cubic feet per minute. It has a Pippin excavator attachment, which is a hydraulic backhoe and shovel. We brought one unit in for a trial and refused to return it.

As soon as the garage doors can be opened, this piece of equipment is on its way to load sand, dig a ditch, break up frozen ground, or drill ledge rock. Many jobs that this machine performs require only two men, an operator and a helper. The necessary tools are loaded into the front-end bucket, one for each of the men on the tractor. Within minutes, this one piece of equipment is ready to roll to the job site with all of the necessary hand tools, power tools, material, and manpower without the aid of a truck or other conveyance.

We do not expect the attachments on this machine to compete with heavy equipment required for big jobs, but we have found it to be the best odd-job machine we ever have had the opportunity of using. It has justified its capital investment many times over.

* The Town of Hartford has its general offices in White River Junction, Vt. There are six municipalities within the town.

An air compressor that is powered by the same unit is used to break through frozen ground.

TWO UNDERWATER PIPELINES

Tacoma brings water to industry with aid of resourcefully built submarine lines

By W. A. KUNIGK
Superintendent and Chief Engineer
Water Division
Department of Public Utilities
Tacoma, Wash.

TACOMA'S TOPOGRAPHY is interesting to the visitor, it can be tiring to the local resident, but it always is challenging to the water-works engineer. It embraces flat tidelands, steep hills in the downtown business area, and rolling uplands in much of our residential districts. Our 400-foot difference in elevation gives us plenty to think about whenever work on the distribution system is necessary.

However, this isn't our only problem. Much of our industry has concentrated in the tidal flats, which are interlaced with waterways to permit access to large ocean-going vessels. Some waterways are a mile long, making it impractical for us to run transmission mains around them. In these cases, submarine pipeline crossings are mandatory, and their installation presents some interesting problems for the engineer.

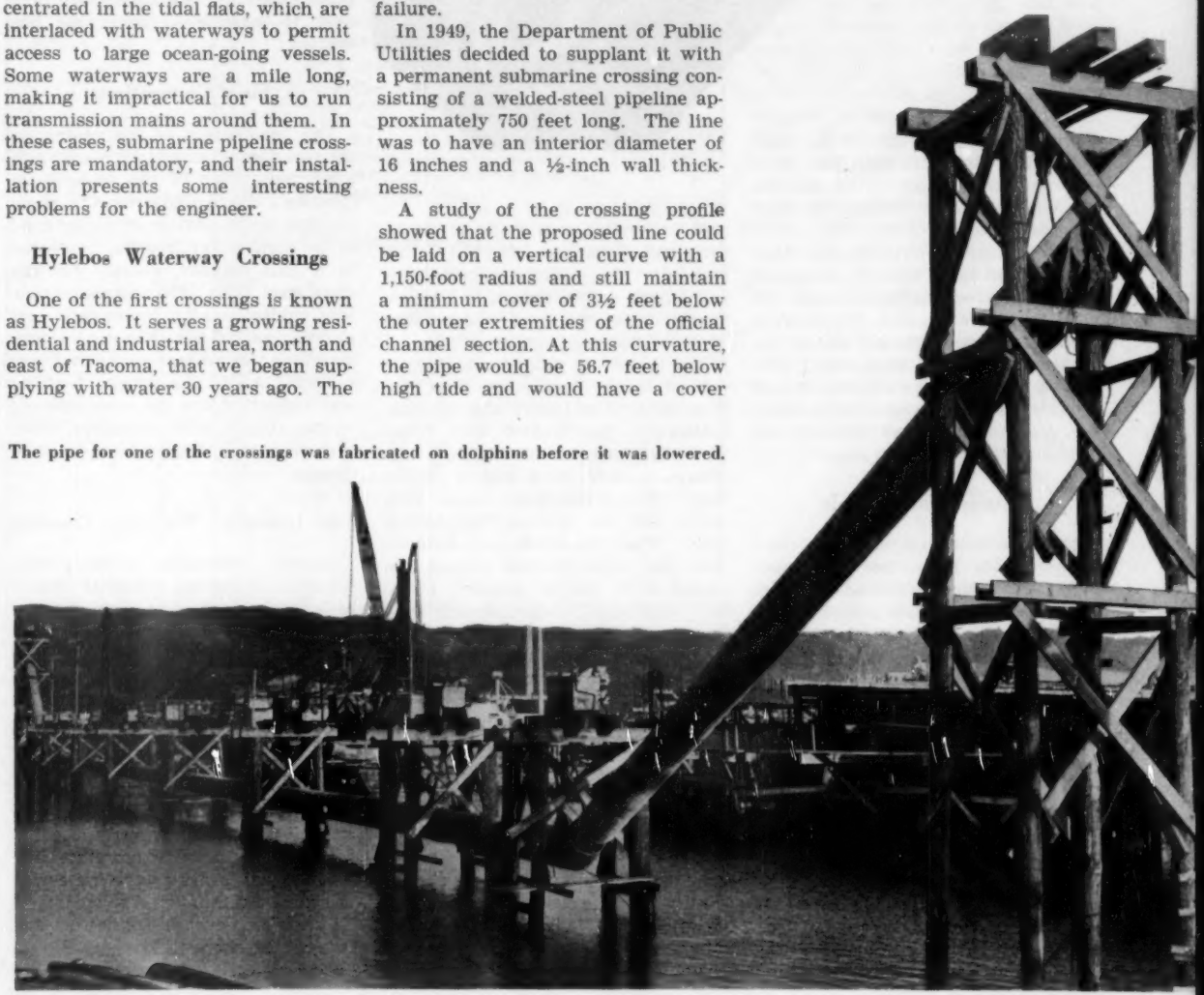
Hylebos Waterway Crossings

One of the first crossings is known as Hylebos. It serves a growing residential and industrial area, north and east of Tacoma, that we began supplying with water 30 years ago. The original installation consisted of a 12-inch, cast-iron, flexible-joint pipe that served the area for approximately eight years. However, shifting conditions in the channel pulled the pipe apart at the joints, causing its failure.

In 1949, the Department of Public Utilities decided to supplant it with a permanent submarine crossing consisting of a welded-steel pipeline approximately 750 feet long. The line was to have an interior diameter of 16 inches and a ½-inch wall thickness.

A study of the crossing profile showed that the proposed line could be laid on a vertical curve with a 1,150-foot radius and still maintain a minimum cover of 3½ feet below the outer extremities of the official channel section. At this curvature, the pipe would be 56.7 feet below high tide and would have a cover backfill of 10 feet at the center of the channel.

The pipe was assembled in 32-foot sections using butt-welded shop joints. Each section received a spun lining of coal-tar enamel, 3/32 of an inch thick on the interior, and a similar lining that was applied by machine on the outside. Both coatings were spark-gap tested in the



The pipe for one of the crossings was fabricated on dolphins before it was lowered.

The launching way used in the Hylebos water crossing forms a segment of a curve with a radius of 1,150 feet.

shop to detect "holidays" in the coating. The Water Division has used coal-tar enamel as a protection against corrosion with good success for many years.

As a further protection, the pipe was encased by a ¾-inch coating of mesh-reinforced concrete mortar, applied by power brushes. The coating is similar in strength and density to gunite and affords mechanical protection to the coal-tar enamel. It also provides added weight, permitting the pipe to be placed without the need for filling it with water.

Installation Methods

The specifications permitted the contractor to place the submerged portions of pipe by either of two methods. One was to assemble the sections on barges and then lower them into the trench by use of floating cranes. The other consisted of assembling the sections in a vertical curve on a launching way built on shore, then sliding and dragging the assembly into and across the channel.

A contract was awarded the Hart Construction Company of Tacoma, who used the latter method. It afforded a more positive placement without overstressing the pipe. It also was much less costly.

A dredge, mounted on a self-propelled barge equipped with a crane boom and a 3½-yard clamshell bucket, did the excavating. It removed silt and stiff clay which readily withstood exposure to erosion from the relatively high-tide velocities. Accurate excavation was made to predetermined elevations, checked at 10-foot intervals. A diver inspected the full length of the trench to be sure that it was free from obstructions such as broken pilings or debris.

The launching way accurately conformed to the design curve so that pipe sections laid were aligned automatically. The welded butt joints were reinforced with welded butt straps ¼-inch thick and 3 inches wide. The joints were tested with air at 40 psi (pounds per square inch). Then the welds were neutralized, the joints cleaned, primed and coated with coal-tar enamel, tested for "holidays," felt-wrapped, and bound with 24-gauge sheet steel. The leading pipe was bulkheaded with dished steel to prevent entrance of water.

The dredging was completed by May 1, 1950. Six days later this underwater section, consisting of 750 feet of pipe, was in place. A double-drum, steam-powered, logging donkey pulled the pipe across the waterway. Very little pulling was necessary until the pipe reached the lowest point at the center of the channel. We took constant soundings as the pipe progressed through the trench and a diver made the final check of alignment and grade. The alignment did not deviate more than 0.2 of a foot at any point, and the grade conformed very closely except at the center where it was 0.9 of a foot high. The pipe was uniformly cradled and its protective covering suffered no damage.

The clamshell bucket backfilled the channel section in steps, using a coarse sand available from the channel bottom. Backfilling started at the center and was carried to the water's edge in successive layers to provide a uniform pipe loading. The two ends were checked carefully against reference monuments to detect movement or settlement. However, none occurred.

Pipe sections between low and high tide were encased in concrete to protect them against damage. Precast channel-shaped sections of reinforced concrete were placed to receive the pipe. The area around the pipe in the section was filled with concrete, and the reinforcing bars projecting from the sides were bent over to provide a continuous box section.

Final Connections

The installation of the piping on the two shore connections were made after completion of the underwater crossing. Field joints for the shore sections were similar to those used in the underwater crossing, protected in a like manner, except for the sheet-steel wrap. The completed pipe was subjected to a hydrostatic test pressure of 200 psi. The entire cost, including the hydrostatic testing, was $48,020. All of the design, drafting and inspection was the responsibility of the author, with Assistant Chief Engineer J. A. Kuehl in immediate charge.

Port Industrial Waterway Crossing

Another submarine crossing that presented different problems had to be installed at the site of an old pile-bent bridge. This bridge formerly supported a 32-inch steel line. However, when it was replaced with a modern bascule bridge, a submarine crossing was required.

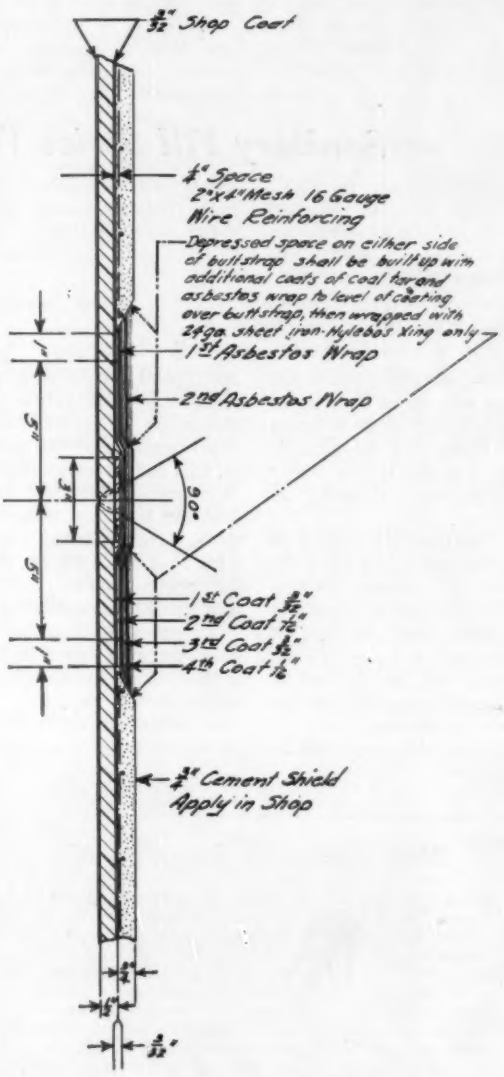
To enlarge the new channel, a flat-bottomed cross section was provided that was approximately 270 feet wide. This eliminated the use of a curved pipeline previously used at the Hylebos waterway crossing. The pipeline grade across the waterway provided a minimum depth of backfill of 5 feet beneath the bottom and sides of the channel. The total length of the replacement section was 1,029

feet. The pipe that we placed in this crossing had an inside diameter of 32 inches and was fabricated of ½-inch steel plate. The Water Division awarded a contract to the American Pipe and Construction Company of Portland, Ore., to furnish the steel pipe and specials. This company also supplied the pipe for the Hylebos crossing.

Enlargement of the channel mentioned previously produced an unexpected difficulty. A fine, fluid silt settled to the bottom of the channel to a depth of 5 to 7 feet. The silt deposit had to be moved several hundred feet from the proposed site before work on the project could begin.

The same type of dredge, barge, and clamshell bucket that had been employed previously at the Hylebos crossing did the excavating. Again, we encountered a stiff clay that successfully withstood exposure to erosion. The trench grade was 6 to 12 inches below the finished pipe grade, and the pipe was suspended to the proper grade during backfilling. A diver inspected the trench to detect obstructions.

The major problem was to determine a method of placing the pipe under water without using joints that would corrode. Our solution was to weld the pipe, on a barge, into 64-foot sections and to assemble the sections suspended above the high tide from dolphins, spaced at 64-foot centers across the channel. One end of the pipe was furnished by the manufacturer, fitted with a butt strap that had one shop-fillet weld. The butt strap served to align the pipe upon assembly. A butt weld was then made on the inside of the pipe, using the butt strap as a backing strip. The other end of the butt strap was then fillet-welded and the entire assembly air-tested at 40 psi. The welds were neutralized and the joints cleaned, primed, coated with coal-tar enamel, and electrically spark-gap tested for "holidays" inside and out. The external joints were then double-wrapped with asbestos pipeline felt, and a gunite shield was applied for further mechanical protection.


3/32" Shop Coat
1/4" Space
2"x4" Mesh 16 Gauge
Wire Reinforcing
Depressed space on either side of buttstrap shall be built up with additional coats of coal tar and asbestos wrap to level of coating over buttstrap, then wrapped with 24ga. sheet iron-Hylebos Xing only
1st Asbestos Wrap
2nd Asbestos Wrap
30°
1st Coat 3/32"
2nd Coat 1/16"
3rd Coat 3/32"
4th Coat 1/16"
3/4" Cement Shield
Apply in Shop

A detailed drawing of a typical field joint used on the Hylebos crossing.

Lowering Operation

The horizontal portion of the line, which was 400 feet long, and the sloped sections, measuring 64 feet long on each side, were lowered into the channel to a depth of 12 feet below low tide by hand-operated winches mounted on the pile dolphins. The lowering operations started at high tide and when the water surface was reached, the pipe was filled with water to overcome buoyancy. The lowering was accomplished in steps and a careful check was made between each step to assure maintaining an even grade at all points.

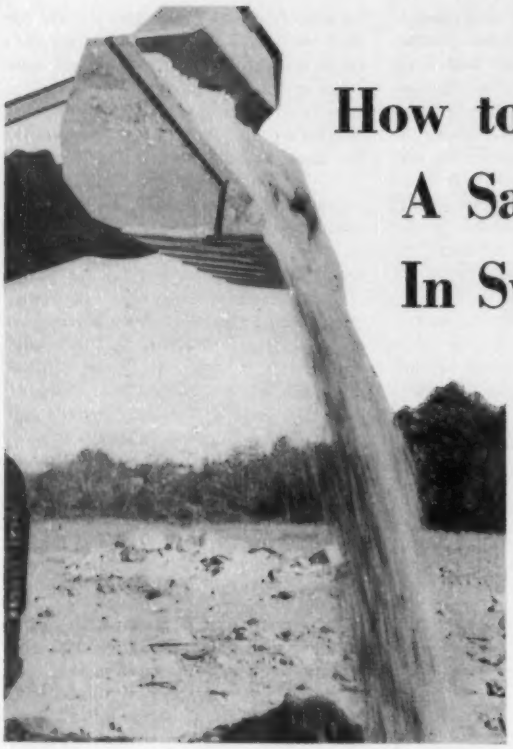
Two additional 64-foot sloped sections were then assembled at each end and the pipe again was lowered. This operation was repeated until the entire channel section of the pipe was down to the proper grade.

Backfilling

Prior to backfilling, a diver made a thorough inspection of the pipe and channel, to see that no pipe rested on high points of the subgrade but was uniformly suspended by the winches. Graded gravel, of a 2-inch maximum size, was used for the backfill and dropped carefully into place with the clamshell. The backfill went on each side of the pipe equally to assure proper alignment. Backfilling started down the center of the channel and progressed uniformly on each side to assure equal distribution.

To prevent mechanical damage between high and low tide, the pipe was encased in concrete in a manner similar to the encasement used in the Hylebos crossing. This encase-

(*Continued on page* 185)



A sandy cover is dumped on Rochester's compacted fill.

How to Build A Sanitary Fill In Swamplands

By *Commissioner of Public Works* PORTER ROBERTS, *reporting for Rochester, N. H.; and City Engineer* W. E. PARKER, *for Seattle, Wash.*

Sanitary Fill Series VIII

SWAMPS, like open dumps, constitute municipal liabilities. Both are nuisances; both are potential health hazards and insect breeders; both represent physical dangers to the people of the community. In one case, the swamp is placed there by nature; in the other, the open dump is a municipal abscess built by man. Fortunately, both can be cancelled out by the careful use of the sanitary fill.

Rochester, N. H.

The experiences of Rochester, a city of 13,000 in southeastern New Hampshire, in building a fill in swampland are typical. Until three years ago, Rochester had used the insanitary open dump. Then municipal officials decided to adopt the sanitary fill, and chose a site in a swampy area.

In the strictest sense of the term, this operation might not be labeled a sanitary fill inasmuch as the face of the fill is not sealed off at the end of each day. All the work has to be tailored to operate from the top of the fill, and enough cover is spread to successfully reduce the danger of rat infestation and other nuisances.

The fill is operated in fingers that are about 75 feet wide and reach out into muck that may be as deep as 20 feet and have a water depth of more than 4 feet. Sandy fill material is stockpiled on each side of the finger in a windrow so that it is easily accessible for cover.

The trucks deliver the refuse to the top of the finger, and a TD-9 International crawler tractor with a Bucyrus-Erie dozer shovel carefully pushes the refuse over the face of the fill. An attempt is made to keep a constant grade on the surface of the fill. As a result, the depth of the fill varies from 4 to 10 feet.

The tractor approaches as close to the face of the fill as is possible and compresses the refuse beyond the tracks by dropping the bucket to exert pressure on the layer. Obviously, this is not the most effective way to compact refuse, but it is the best that can be done under these conditions. Cover material is brought from a sand pit about 200 yards away from the construction by one or two trucks in a three-hour operation each week.

As the mucky underburden consolidates, as a result of the pressure applied to it, the completed fill may settle several feet into the swamp. This settlement provides the opportunity to build a second fill on top

Medics Support Sanitary Fill

SINCE garbage is one of the chief means of transmitting the trichina larvae of "garbage worms" to hogs and rats, the sanitary disposal of garbage was considered at great length (at the second National Conference on Trichinosis held in the auditorium of the AMA in Chicago). Garbage may be kept away from the animals altogether by various means, the cheapest and most practical way being burial, with use of the method known as the sanitary fill. The chief drawback to this method is in obtaining the consent of the community for a suitable site for this purpose within a reasonable distance from the center of population. Such an operation properly conducted creates no nuisance, but some influential voters do not realize this and are often stubbornly unwilling to be convinced.

—Excerpt from an editorial in The Journal of the American Medical Association, March 27, 1954.

Ordinarily, swamps (shown in the background) are a total loss to the community, but with fill-and-cover Rochester is now able to reclaim this land.

of the settled fill and further reclaim the swampy area.

The forces required for this construction include only the tractor-shovel combination and an operator. Trucks are assigned to the part-time job of hauling cover material.

With this technique of construction, Rochester is disposing of 36,000 cubic yards of refuse annually, and transforming a wasteland of muck into useful property.

Seattle, Wash.

Across the country, in Seattle, Wash., the business of reclaiming swampland with the sanitary fill method is a 25-year-old story. Here the reclaimed land which is subject to little settlement after the first two to three years, has been transformed into parks, playfields, and industrial property.

The garbage is spread to sufficient depth to support trucks and is then covered with earth. Additional loads of garbage are dumped on this "working platform" and pushed uphill by a bulldozer to form an 8-foot lift. This technique compacts the garbage, saves space, eliminates fire and rodent problems, as well as reduces the settlement of the fill to a minimum.

Strong Odors

Contrary to the experience in New Orleans, La., the city has had no success in excavating into completed fills. (See AMERICAN CITY, October 1953, page 83.) Even when fills are 10 to 20 years old, strong odors of decomposition are present. Tin cans, paper folded to several thicknesses, and even orange peels are occasionally recognizable.

The city maintains four separate fills that receive refuse from a population of over 500,000 persons and cover an area of 120 acres. Four Caterpillar D-6 tractors, equipped with bulldozer blades, are assigned one to each fill. The refuse contributed exceeds 1,750,000 cubic yards annually.

The work is conducted under the supervision of W. R. Johnson, senior engineer.

As fill problems, such as building in a swampland, are solved, more and more cities have adopted this method of refuse disposal. In April 1947, THE AMERICAN CITY reported fill-and-cover operations in 91 cities distributed among 26 states. Seven years later, health departments of 42 states and Alaska report 468 cities using fill-and-cover. States not reporting include Alabama, Delaware, Montana, Nevada, Oregon and Pennsylvania. These states and cities include:

Arizona, 4; Arkansas, 1; California, 21; Colorado, 3; Connecticut, 2; Florida, 37; Georgia, 32; Idaho, 3; Illinois, 13; Indiana, 12; Iowa, 12; Kansas, 14; Kentucky, 16; Louisiana, 4.

Maine, 4; Maryland, 3; Massachusetts, 3; Michigan, 11; Minnesota, 4; Mississippi, 11; Missouri, 7; Nebraska, 8; New Hampshire, 3; New Jersey, * counties; New Mexico, 11; New York, 3; North Carolina, 25; North Dakota, 7.

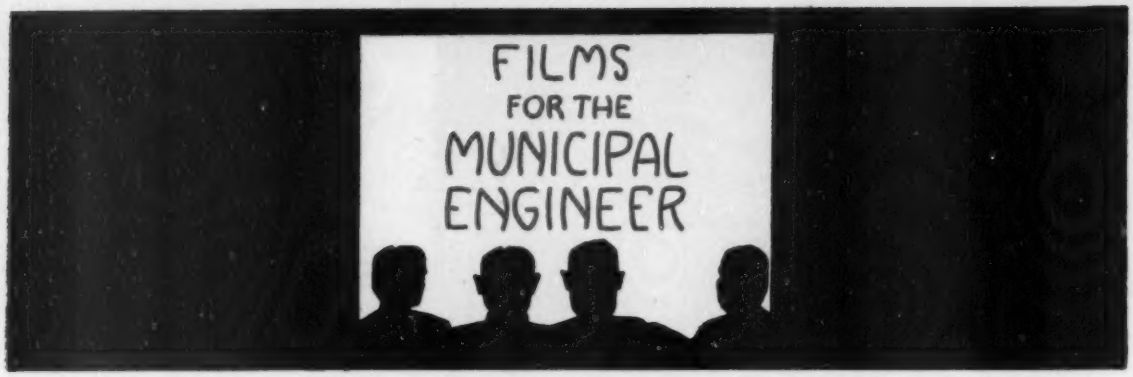
Ohio, 30; Oklahoma, 9; Rhode Island, 2; South Carolina, 7; South Dakota, 6; Tennessee, 18; Texas, 57; Utah, 1; Vermont, 1; Virginia, 19; Washington, 9; West Virginia, 7; Wisconsin, 20; Wyoming, 1; Alaska, 1.

Articles in the Sanitary Fill Series that have appeared to date:

Sanitary Fill Re-Used Safely, October 1953, Page 83
Sanitary Fills Are the Answer, November 1953, Page 112
Go Heavy on Compaction, December 1953, Page 88
The Ramp-Type Sanitary Fill, January 1954, Page 88
The Trench-Type Sanitary Fill, February 1954, Page 102
Temperature is a Test of Decomposition, March 1954, Page 29
The Area Method of Landfill, April 1954, Page 116

The tractor advances close to the face of the fill and uses a bucket to compact refuse not reached by the crawler treads.

A sandy cover is bulldozed atop the compacted refuse. Settlement allows construction of a second fill in the same area.



Compiled by the American Public Works Association, 1313 East 60th Street, Chicago 37, Ill.

REFUSE COLLECTION

The Refuse Collector
16mm.

Available from Los Angeles Public Works Department, Room 151, City Hall, Los Angeles, Calif.

Sani-Van
16mm. Black and White. Sound. 20 min.

On covered garbage trucks.

Available from Sicard Manufacturing Co., Montreal, Quebec, Canada.

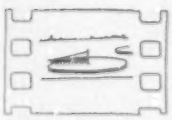
Dempster-Dumpster in Use at Boston, Richmond, Oak Ridge and Athens
1948. 16mm. Black and White. Silent. 30 min.

Available on loan from Dempster Brothers, Inc., Springdale Ave. and Southern Railroad, Knoxville 17, Tenn.

My Father's a Garbage Man
1949. 35mm. 24 frames.

The housekeeping functions of a typical sanitation department, suitable for schools.

Available from Encyclopedia Britannica Film Library, 207 South Green St., Chicago, Ill., or branches in New York, Boston, Atlanta, Dallas, Pasadena, and Birmingham, Mich.



SEWAGE TREATMENT

Clean Waters
1947. Color and Black and White. Sound. 20 min.

On natural waters and $100,000,000 annual loss to U. S. due to water pollution; dangers to fish and wild life, city water supply systems, recreational facilities, and public health. A public relations film in support of sewage-treatment projects, prepared in cooperation with U. S. P. H. S.; named best commercially sponsored film in 1947.

Available on loan from General Electric Co., 840 S. Canal St., Chicago, Ill., or regional offices.

A Tale of the Twin Cities
1949. 16mm. Color. Sound. 20 min.

Machines for removal of sludge solids; chemists making tests; settling tanks; incinerators, etc. Emphasis on preservation of natural waters for public health and elimination of bad sewage conditions.

Available on loan from Sanitary District, Minneapolis–St. Paul, Minn.

Taken for Granted
16mm. 35mm. Sound. 19 min.

Famous Mogden (London) sewage-treatment plant, using trickling filters and activated sludge. "Particularly well suited for water and sewage works engineers." —The American City.

Available on loan from British Information Service, 30 Rockefeller Plaza, New York, N. Y. $2.50.

Municipal Sewage Treatment Processes
16mm. Black and White. 13 min.

Basic methods of sewage treatment to prevent stream pollution; equipment and process. For public health sanitarians and engineering students.

Produced by U. S. Dept. of Public Health and available on loan and purchase ($17.67) from Communicable Disease Center, Atlanta 3, Ga.

The Sewage System
16mm.

The sewage system of Los Angeles.

Available on loan from Los Angeles Public Works Dept., Room 151, City Hall, Los Angeles, Calif.

Modern Methods of Sewage and Waste Treatment
1951. 16mm. Color. Sound. 33 min.

Available on loan from Infilco Company, Box 5033, Tucson, Ariz.

The Dorr Way
1948-49. 16mm. Color. Sound. 33 min.

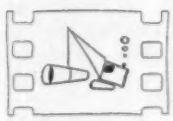
History of the company and coverage of outstanding installations of Dorr sewage-treatment plant machinery.

Available on loan from The Dorr Co., 221 N. LaSalle St., Chicago 1, Ill.

Sewage Disposal
1930. 16mm. Silent. 15 min.

Purification by Imhoff tank and sprinkling filter, sand filtration, and discharge of sewage into ocean with ebb tide.

Available on loan or purchase ($24) from Encyclopedia Britannica Films, Inc., 20 N. Wacker Dr., Chicago 6, Ill., or regional branches.



SEWER CONSTRUCTION AND MAINTENANCE

Installing Cast Iron Pipe
1947. 16mm. Black and White. Sound. 20 min.

Accepted practices in handling, transporting, distributing, and laying cast-iron pipe. Making lead, sulphur, compound, and cement joints; assembling of mechanical joints. Emphasis on trench conditions and backfilling. "Informative and educational. Helpful for showing to new personnel and as refresher course for experienced construction superintendents." — Cast Iron Pipe Research Association.

Available on loan from Cast Iron Pipe Research Assn., Peoples Gas Building, Chicago 3, Ill.

Loads on Underwater Conduits
1951. 16mm. Color. Sound.

Theory and forces acting on buried conduits.

Available for purchase ($80) from Visual Aids Production Unit, Information Service, Iowa State College, Ames, Iowa; and for rent ($1) from Visual Instruction Service, Engineering Extension Dept., Iowa State College, Ames, Iowa.

OK Champion Power Sewer Cleaners
1951. 16mm. Color. Silent. 20 min.

Available on loan from Champion Corp., 4714 Sheffield Ave., Hammond, Ind.

Out of the Earth
16mm. Color. Sound. 25-30 min.

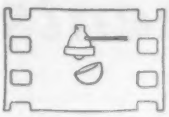
Shows step-by-step process of changing clay as mined to finished vitrified clay pipe.

Available on loan from The Robinson Clay Product Co., 65 W. State St., Akron 9, Ohio.

Installing Cast Iron Pipe
16mm. Sound. 22 min.

Shows processes of installing underground iron piping.

Available on loan from Cast Iron Research Assn., 122 S. Michigan, Chicago 3, Ill.



STREET LIGHTING

There's Danger in Darkness
35mm. Black and White. Soundslide. 6 min. (33⅓ rpm turntable required.)

Advantages of adequate street lighting and benefits from installation of properly designed street-lighting equipment. This film is the "light" side of a pair of pictures; *Autopsy of An Auto Accident* shows "black" side of street-lighting story.

Available on loan from Film Division, Westinghouse Electric Corp., Box 868, 511 Wood St., Pittsburgh 30, Pa.

City Out of Darkness
16mm. Black and White. Sound. 9 min.

Construction of power station in West Berlin on which Germans have been working day and night since April 1948; machinery flown in by "airlift." Sequences on generation of electricity from coal.

Produced by Economic Cooperation Administration and available on loan from A. F. Films, Inc., Room 1001, 1600 Broadway, New York 19, N. Y.

ICE AND SNOW CONTROL

Double Duty
16mm. Color. Sound. 12 min.

Use of Caterpillar track-type tractors, bulldozers, and motor graders for snow removal; also Traxcavator, Mobiloader, and Athey Force Feed Loader.

Available on loan or purchase ($61.75) from Advertising Dept., Caterpillar Tractor Co., Peoria, Ill.

Adams Rotary Snow Plow for Motor Graders
1949. 16mm. Color. Silent. 13 min.

Rotary snow plows opening deep drifts and loading snow into trucks on city work.

Available on loan from J. D. Adams Manufacturing Co., 217 South Belmont Ave., Indianapolis 6, Ind.

Barber-Greene Snow Loaders
1949. 16mm. Color. Silent. 12 min.

Available on loan from Barber-Greene Co., 631 W. Park Ave., Aurora, Ill.

Blockade Breakers
1949. 16mm. Color. Sound. 27 min.

Sicard rotary snow plow on all-wheel drive and steer power grader in snow removal.

Available on loan from Austin-Western Co., 601 N. Farnsworth Ave., Aurora, Ill.

A New Era in Spreading
1942. 16mm. Color. Silent. 10 min.

Use of salt and sand in snow removal.

Available on loan from Flink Co., 502 N. Vermillion St., Streator, Ill.

Snow Fighters
16mm. Color. Sound. 10 min.

Montreal's snow-removal methods and summer planning for winter clearance.

Produced for Montreal Public Works Dept. and available on loan from International Harvester Co., Consumer Relations Dept., 180 N. Michigan Ave., Chicago 1, Ill.

Snow Road
1949. 16mm. Color. Sound. 20 min.

Winter operations of maintenance forces, rotary snow plows, ski lift.

Produced by Colorado State Highway Dept., and available on loan from Dept. of Public and Intergovernmental Relations, 510 State Office Bldg., Denver 2, Colo.

SANITARY LANDFILLS

A Community Problem
16mm. Color. Sound. 13 min.

On sanitary landfill, open dumps, incineration, and mechanical disposal methods; wide range of equipment without trade-name mention. Stresses cost advantages of landfill. Directed toward citizens to encourage landfill legislation.

Available on loan from Advertising Department, Caterpillar Tractor Co., Peoria, Ill.

Sanfill—U. S. Public Health Sanitary Fill
1946. 16mm. Color. Sound. 25 min.

Available from Drott Manufacturing Corp., 3841 West Wisconsin Ave., Milwaukee 8, Wis.

Construction of Sanitary Landfills with Traxcavators
1949. 16mm. Color. Sound. 30 min.

Available from Trackson Co., 3333 S. Chase Ave., Milwaukee 7, Wis.

Army Sanitary Fill
1943. 16mm. Black and White. Sound. 15 min.

Available from Drott Manufacturing Corp., 3841 W. Wisconsin Ave., Milwaukee 8, Wis.

Sanitary Landfills
16mm. Color. 17 min. Animated.

Defects in open dump, garbage feeding, and incineration. Benefits of landfills, planned and operated as an engineering program.

Available for purchase ($82.13) from Castle Films, 1445 Park Ave., New York 29, N. Y.; or on loan from local department of health.

STREET SWEEPING AND SANITATION

Mobil-Sweeper
16mm. Black and White. Silent. 15 min.

Sweeping in unusual street conditions.

Available on loan from The Conveyor Co., 3260 E. Slauson, Los Angeles 58, Calif.

All Around the Town
1949. 16mm. Color. Sound. 23 min.

Model 40 street sweeper in action.

Available on loan from Austin-Western Co., 601 N. Farnsworth Ave., Aurora, Ill.

Mobil-Sweeper Performance and Operation
16mm. Color. Silent. 15 min.

Available on loan from The Conveyor Co., 3260 E. Slauson, Los Angeles 58, Calif.

Littleford Road Brooms
16mm. Black and White. Silent. 12 min.

Available on loan from Littleford Brothers, Inc., 45 E. Pearl St., Cincinnati, Ohio.

Tree Trimming and Removal
35mm. Color. Sound. 25 min.

Phases of training program; tree trimming and removal tools; disposing of cuttings; safety handles and belts; line clearing. Available on loan from Asplundh Tree Expert Co., Jenkintown, Pa.

Chemical Weed Control
1949. 16mm. Color. Sound. 25 min.

Methods of applying chemicals for weed control in major crops of U. S. and Canada; weed and woody-brush control along public utilities and rights-of-way; and explains new uses for these chemicals.

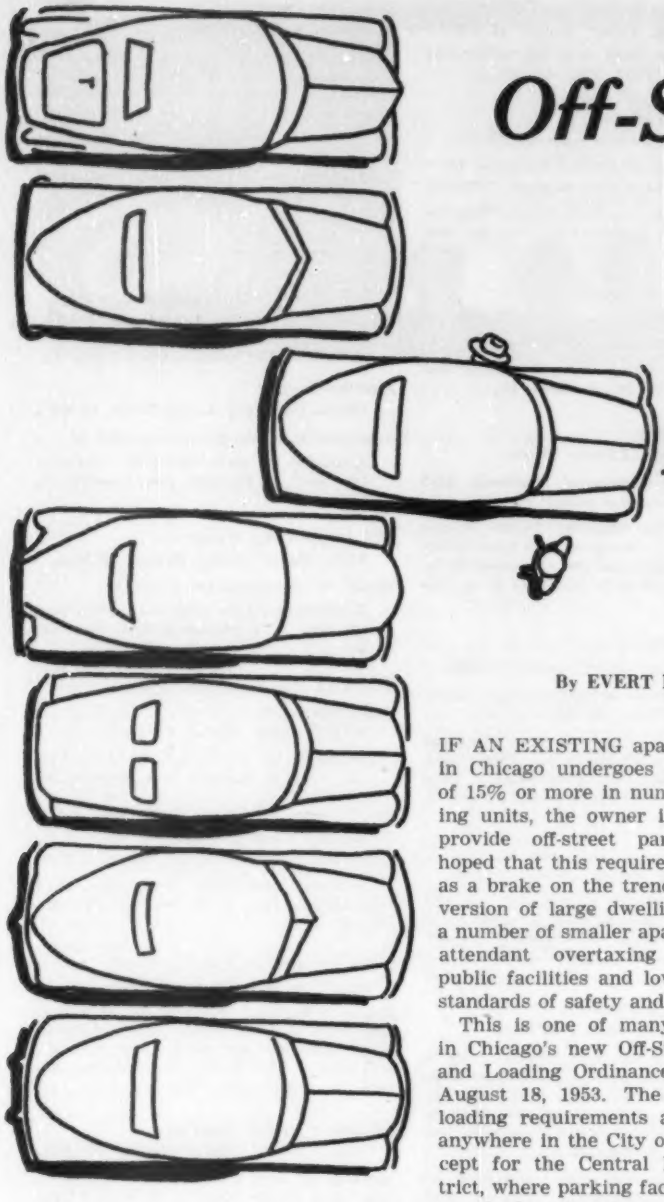
Available on loan from Dow Chemical Co., Public Relations Dept., Hopkins Bldg., Midland, Mich.

MISCELLANEOUS SANITATION

Environmental Sanitation
16mm. Color. Sound. 10 min.
Sanitary facilities and practices that protect health and lives in crowded cities.

A Walt Disney production. Available

(*Continued on page* 160)



Off-Street Parking and Loading Requirements

By EVERT KINCAID, *Planning Consultant, Chicago, Ill.*

Chicago takes steps to control street-traffic congestion and to avoid overtaxing public facilities through zoning ordinance amendment specifying space and design standards for parking and loading facilities for various uses

IF AN EXISTING apartment house in Chicago undergoes an expansion of 15% or more in number of dwelling units, the owner is required to provide off-street parking. It is hoped that this requirement will act as a brake on the trend toward conversion of large dwelling units into a number of smaller apartments with attendant overtaxing of existing public facilities and lowering of the standards of safety and livability.

This is one of many innovations in Chicago's new Off-Street Parking and Loading Ordinance, adopted on August 18, 1953. The parking and loading requirements apply to uses anywhere in the City of Chicago, except for the Central Business District, where parking facilities are not required owing to extremely high land costs and to the feasibility of providing mass parking facilities through large public and private garages and parking areas.

Several indices of the need for parking and loading space have been established in the new ordinance, and these form the basis for quantitative determination of required parking and loading facilities. Thus, parking requirements for residential uses are based on number of dwelling units, while for theaters, seating capacity is used.

Parking space for retail uses is computed on the basis of retail floor area and for manufacturing uses on the basis of maximum employment at a work shift. All loading space requirements are predicated on the amount of gross floor area, this being the most reliable index for this purpose.

The location of off-street parking facilities with respect to distance from the principal use served was an important consideration. Obviously, it would be desirable to have all accessory parking provided on, or contiguous to, the site of the principal use served.

Unfortunately, this is not always possible, and so with the exception of low-density dwellings where on-site parking is a reasonable requirement, off-site facilities must be permitted. Such off-site facilities, however, should be within a convenient walking distance of the principal use to adequately serve their purpose. Surveys have consistently revealed the reluctance of drivers to patronize parking facilities which are not reasonably close to their destination.

Walking Distances Established

With these considerations in mind, three walking distances have been established in this amendment for off-site parking facilities. Parking areas to serve apartment houses would be permitted to locate within 300 feet; certain other uses such as hospitals, sanitariums, lodging houses and dormitories would be restricted to a distance of 500 feet; while the majority of uses, including retail, would be permitted to furnish re-

quired parking facilities within 1,000 feet, or approximately 1½ blocks, of the principal use.

In general, off-site facilities accessory to a principal use may be located in any other zoning district in which such use is permitted, including any less-restricted district, but not in a more restricted district. Thus, a parking lot accessory to an apartment house can locate in an Apartment or a Business District, but not in a family, duplex, or group house district. This restriction may be modified by the Board of Appeals, but in no case could parking facilities accessory to an apartment, business, or manufacturing use be permitted in a family or duplex district. However, parking facilities serving a main use in an industrial district are to be permitted in a manufacturing or commercial district.

The Board of Appeals, of which the author is a member, may authorize the location, in an apartment district, of parking facilities accessory to a nonresidential use in an adjoining district or to an existing professional or institutional office building. Such authorization would be contingent upon appropriate safeguards and conditions set forth in this amendment. This is designed to alleviate traffic congestion in business districts which are already developed and in which there is an acute shortage of available space for transient parking purposes.

Standards governing the design of parking spaces and loading berths set forth in this ordinance control the following:

1. Size and surfacing of parking and loading spaces.
2. Location of facilities with respect to street lines and required yards.
3. Means of access in relation to traffic movement.
4. Screening, landscaping and lighting.

In addition, accessory off-site facilities in residence districts would have to be open to the sky; garage structures for this purpose, a potential adverse influence to residential districts, would be prohibited.

These standards governing the manner in which parking spaces shall be designed and maintained should encourage the development of clean, efficient, and attractive parking facilities and so should eliminate most of the objectionable features commonly associated with parking areas open to public view.

SAMPLE PARKING AND LOADING REQUIREMENTS

	PARKING SPACE	*LOADING BERTHS* *Floor Area (Square Feet)*	*Number*	*Size (Feet)*
1- and 2-family dwellings	1 per family dwelling unit	.....	..	.....
Multiple dwellings:				
(Low Density)	Equal in number to 75% of bedroom apartments; 50% of efficiency apartments	.....	..	.....
(High Density)	Equal in number to 60% of bedroom apartments; 40% of efficiency apartments	50,000-200,000	1	.....
		For each additional 200,000 sq. ft.	1	.....
Hospitals	1 per 3 beds	50,000-200-000	1	.....
	1 per 10 daily visitors to out-patient facilities	For each additional 200,000		
	1 per 1,500 sq. ft. of floor area in residents' quarters	sq. ft.	1	.....
	1 per staff or visiting doctor			
Retail Stores	1 per 300 feet of floor area over 2,000 square feet	2,000- 8,000	1	10 x 25
		8,000- 25,000	1	10 x 45
		25,000- 40,000	2	10 x 45 each
		40,000-100,000	3	10 x 45 "
		100,000-250,000	4	10 x 45 "
		For each additional 200,000 sq. ft.	1	.....
		Gross Floor Area (Square Feet)		
Manufacturing and Industrial Uses	1 for each 4 employees, based on the maximum number employed	2,000- 40,000	1	.....
		40,000-100,000	2	.....
		For each additional 100,000 sq. ft. or fraction thereof	1	.....

Special Uses

Automobile parking facilities developed as a business enterprise and catering to transient trade are to be treated as special uses, subject to review and determination by the Board of Appeals. Since these are not necessary facilities, special provision must be made for their location and operation.

In addition, the Board of Appeals will have jurisdiction over facilities developed for *existing* apartment buildings away from the site of the building served, except that open facilities can be developed as a matter of right on an adjacent lot or, of course, on the same lot with the main building.

In order to maintain the parking areas established under the provisions of the ordinance, the following regulations apply:

"The land upon which the parking facilities are located, or to be located, shall be in the same possession, either by deed or long-term lease, as the property occupied by the use to which the parking facilities are auxiliary, in which case the owner of the land shall be bound by the covenants filed on record in the office of the Recorder of Deeds or the Registrar of Titles of Cook County, requiring the owner, his or her heirs and assigns to maintain the required number of parking facilities throughout the existence of the principal use."

Support of Ordinance

Before passage of the off-street parking and loading provisions, described above, a number of months were spent in research and in conference with individuals and groups representing all phases of Chicago's civic and business activities. The Chicago Plan Commission and the Street Traffic Commission cooperated fully in securing data pertinent to the problem and in preparing the basic regulations.

Support was also forthcoming from the many other municipal and civic organizations.

The plant has three Clariflocculators and space for a fourth.

New Haven Builds A Third Plant In 20 Years

City completes harbor sanitation program and eliminates dumping of untreated sewage into Long Island Sound

By WILLIAM M. BOLTON
City Engineer
New Haven, Conn.

WITHIN THE SHORT PERIOD of only 20 years, New Haven has recognized its sanitation responsibility by building not one, but three separate sewage-treatment plants to correct harbor pollution caused by the disposal of untreated sewage and industrial wastes.

At the dedication of the newest plant, the East Shore Sewage Treatment Plant, early last year, William S. Wise, director of the Connecticut Water Commission, summed up the city's accomplishment.

"There is no other city in Connecticut," Mr. Wise said, "and, as far as I know, in the country, where a city of this size was required to build three plants to treat the sanitary wastes and some of its industrial wastes . . . to clean up its harbor, its waterways . . . front and back yards.

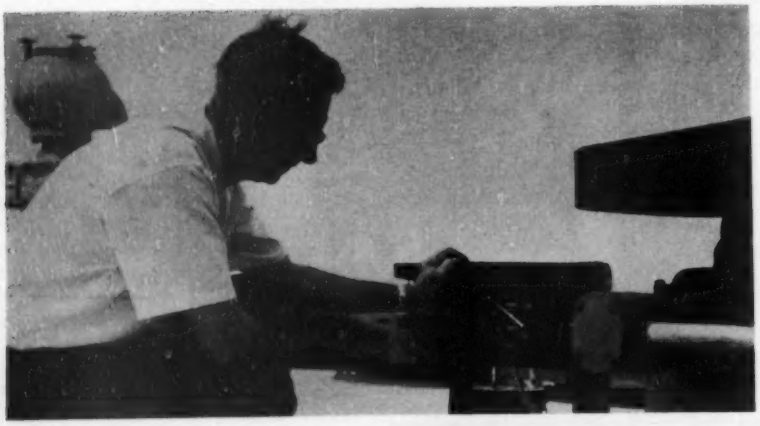
"The cost of building and operating these plants is large . . . running into millions of dollars. They were not built by the city merely to spend taxpayers' money. Neither was their construction urged by state agencies merely to satisfy the whims and fancies of a group of idealistic people.

"They were built to clean up New Haven Harbor; they were built to make the shorewaters and New Haven Harbor waters more suitable for recreation and shellfish production; they were built to make the New Haven Harbor development more effective so that dredging and maintenance can be kept to a minimum; they were built in accordance with a state-wide program of pollution abatement to promote the welfare, growth, and prosperity of the state; they were built in accordance with the growing public demand that our streams, our rivers, our harbors, and our shores be cleaned up to be more useful to everybody."

The new East Shore plant completes the program insofar as treatment plants are involved. When the sewers are completed, raw sewage or industrial waste will not be able to flow to the harbor without first passing through a treatment plant and freeing itself of a part of its pollution load.

New Treatment Methods

While the plant is designed to operate on time-tested principles, it nevertheless has incorporated relatively new methods that reduce costs. The plant has an ultimate capacity



Plant Superintendent Kenneth E. Foote inspects the Foxboro dial-type thermometer that is used on the digestion tank in New Haven's sewage-disposal plant.

The two digester tanks are shown here. The fixed cover tank is in the foreground; the floating cover is in the rear. The swinging pipe on the face of the building delivers sludge to a tank truck, which transports it to another plant for dewatering.

of 18 mgd (million gallons daily). At present, it is receiving only 3 mgd. However, the city has an active program that will extend its sewers to unserved areas. Consequently, the load is expected to rise rather sharply. The sewage probably will have a large portion of industrial wastes in the future, judging from the interest industry has expressed in the area served by the new improvement.

The plant receives the sewage in a wet well where three Worthington raw-sewage pumps lift it approximately 25 feet so that it flows through the rest of the plant by gravity. These pumps have capacities of 1,800, 2,500, and 3,000 gpm (gallons per minute), against a 28-foot head. They are powered by U. S. Electric motors with Healy and Ruff controls.

The sewage then flows along a channel through a bar screen to the grit chamber. The bar screen has 3-inch openings and is cleaned manually. The grit chamber is a Dorr Detritor.

From here, the grit-free sewage flows through either of two Chicago comminutors. The flow to either is controlled by Everdur sludge gates. The comminutor macerates the remaining large solids so that they are easily handled in the settling basin. One comminutor is used at a time. The other remains available as a stand-by. Each can pass flows of 4½ million gallons daily.

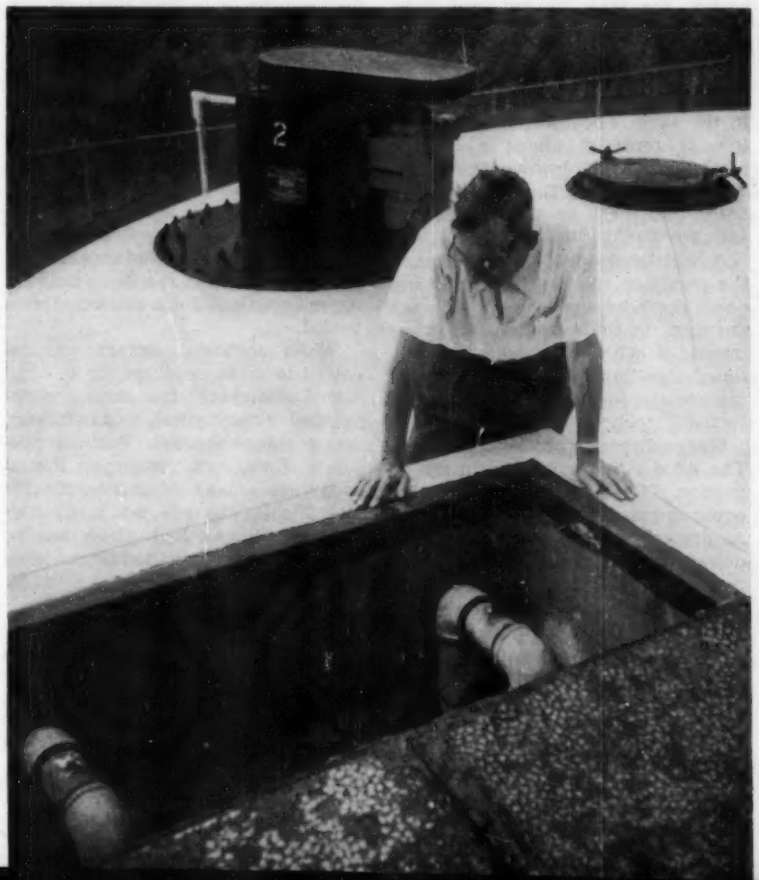
The sewage then passes to three settling basins, each 70 feet in diameter. The basins are designed to combine flocculation and clarification in the same unit by means of Dorr Clariflocculators. The ultimate design anticipates a two-hour detention period. However, under present operating conditions, detention is much longer. The plant is laid out so that a fourth Clariflocculator can be supplied at a later time.

The sewage then passes through a Builders-Providence venturi tube that measures the flow that enters harbor waters. The outfall, a 48-inch, reinforced-concrete pipe, extends about 3,800 feet into the water of the channel of New Haven Harbor, 50 feet below high tide. From the 15th of May to the 15th of September, the treated effluent is chlorinated for added safety. The plant uses a pair of Wallace & Tiernan chlorinators that are safely located in a separate, sealed chlorinator room. The chlorine is supplied in 1-ton containers.

The sludge from the Clariflocculators goes to a pair of digesters, each 60 feet in diameter, one of which has a gasholder cover. Three Carter plunger-type sludge pumps with Westinghouse electric motors transfer the sludge through lines controlled by ACF lubricated plug valves.

The digestion tanks are brought to the optimum digestion temperature through the action of removable vertical heating coils. There are three coils in the primary tank which extend to the bottom of the tank in three loops and are made of 2-inch, wrought-iron pipe. This presents a simpler, more practical means of keeping the tank at a good operating temperature than other methods examined.

It also provides a means of remov-



One of the digester's three removable heating coils is mounted here. The two pipes form the intake and outlet. One of three sludge mixers is in the background.

City Engineer Bolton explains plant operating procedure to a charming visitor.

ing and repairing the coils should it become necessary. To repair a fixed coil, the tank must be emptied—an inconvenient, dangerous job because of the explosive methane gas. A dial-type Foxboro thermometer, mounted in the dome, permits convenient reading and recording of sludge temperatures.

To prevent scum from forming on top of the sludge in the primary digester, the tank is equipped with three circulating draft tube mixers which are mounted vertically in the tank. The top of the tube extends to a point just below the liquid surface in the tank. The tube, flared at the top, is centered under a driving mechanism which rotates a propeller counterclockwise. The propeller extends into the tube about 2 feet below the liquid surface.

A whirlpool effect is created, and the resultant suction pulls the scum down the tube and forces it through openings in the lower portion, thus mixing it with the sludge for additional digestion. With the aid of these mixers, the formation of scum is effectively reduced.

Sludge digestion proceeds in stages. The fixed tank provides primary digestion. The tank with the floating cover supplies the secondary stage. At present, the plant has no sludge-dewatering facilities. The plan is to transfer the sludge by truck in its liquid form to the East Street Sewage Treatment Plant where it will be filtered and incinerated.

The plant is equipped with a complete laboratory. A G-E Cabinetrol switchboard provides controls for all major mechanical units. Trane unit heaters provide warmth for the building in cold weather.

The plant cost $1,000,000; the gravity sewer that delivers the sewage to the plant, $250,000. About $610,000 was spent for the Morris Cove Pumping Station, additional trunklines, and the 16-inch, twin siphon which carries the sewage under the Quinnipiac River to the control chamber, and from there by means of a 30-inch, reinforced-concrete, gravity sewer to the plant. An estimate of future sewer construction of pumping stations, force mains, and street sewers calls for an investment of $4,500,000.

The plant was built during the administration of Mayor William C. Celentano, under the general direction of Anthony Paolillo, director of public works. The plant was designed by the city engineering staff, and is operated by Kenneth E. Foote, superintendent of sewage plants.

Mechanical Sewage-Flow Measurement

THE DIFFICULTY and danger of measuring dry-weather sewage flow have been reduced by the development of a new sewage metering instrument. The new meter substitutes a mechanical system of measuring sewage flow for the previous methods that required workers to descend to the bottom of a sewer to make readings with current meter.

The meter was developed as a result of the General Industries, Inc., contract to design three of approximately 70 new intercepting chambers for the City of Philadelphia. For this job, dry-weather flow of sewage was measured by the standard method. Two-man teams made hourly measurements with the current meter, 24 hours a day. Lethal gases in the sewers were an ever-present danger, sometimes compelling the men to wear gas masks. Traffic was interrupted because of the barricades that were erected around open manholes. Furthermore, the meter sometimes became clogged with sewage particles, especially when the measurements were made in the vicinity of tanneries. On these occasions, the measurements had to be repeated because the process required uninterrupted readings for a representative period.

When another contract was received to make readings for 40 additional chambers, the company developed a mechanical, more efficient, and accurate method. Basic components of the new measuring instrument are a tank of carbon dioxide gas, a metal dip tube, and a recorder or meter box—all of which can be transported and installed by two men. The metering assembly was built by Fisher and Porter, Hatboro, Pa.

The tank of gas and recorder are secured to the manhole walls of the sewer where the measurements are to be made. The dip tube is connected by tubing through the recorder to the gas cylinder and extends down into the sewer water impounded by the dam.

In operation, the carbon dioxide gas passes from the tank through a constant-pressure valve to the recorder, and then to the dip tube, finally escaping through the submerged end of the tube. A needle valve at the tube end regulates the escape of the gas according to the pressure exerted by the water. A stylus in the recorder is actuated by the volume of gas escaping from the tube. Changes in the water level of the dam correspondingly change the rate at which the gas escapes. All these fluctuations are recorded by the stylus. The instrument is designed and calibrated to record all measurements in terms of inches so that further conversion of the data is unnecessary.

All component parts of the new instrument are installed in the manhole beneath the surface of the street so that no permanent barricades are required. Also, the workers only have to check the operation once every 24 hours, at which time the completed graph is removed and a new one installed.

From the standpoint of economy, the new method permits two men to do a job which had required six men working in two-man shifts. Also, the job calls for a regular work week instead of round-the-clock operation. Two men install the new meters in three sewers at one time and leave them.

While the meters measure the sewage flow automatically, the men have time to plot the results of previous measurements and prepare the information needed for the design of the intercepting chambers. Previously such plotting had to be done by another group of men, aside from those making the measurements. The new meter is available for general distribution from General Industries, Inc., 309 S. Broad St., Philadelphia, Pa.

Seven-League Strides

Toward Orderly Traffic

By BENJAMIN H. KIZER *

WHEN I READ RECENTLY "Every City a Traffic Strainer," as reprinted from the April 1953 issue of THE AMERICAN CITY, it occurred to me that your readers might like to know of a crude form of "traffic strainer" put into effect by the City of Spokane, Wash.

Highways and travel in and out of Spokane are mostly east to west and west to east. Second and Third Avenues on the southern edge of the congested district are devoted to through traffic. These 75-foot-wide streets have been made one way and equipped with progressive traffic signals to speed the traffic and get the maximum use out of these streets. The traffic flows swiftly at all times of the day, and includes much of our local crosstown traffic as well as through traffic. These are not limited-access highways — as your plan recommends for large cities—but that feature is not necessary in a city of 160,000 people.

Because the parking situation has not been fully organized in Spokane, this expeditious handling of through and crosstown traffic has not prevented congestion in the business district. There is no doubt that short-time and long-time parking should be treated separately and differently.

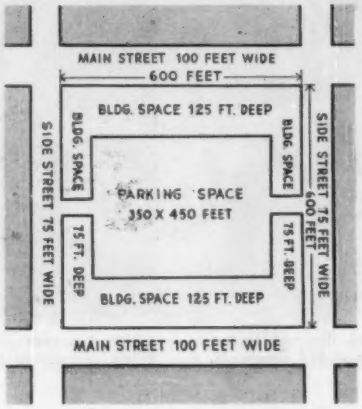
Short-time Parker

For the short-time parker, it is my belief that the city should establish metered parking lots of sufficient number to tend to abolish curb parking on principal business streets. These shoppers' lots should be located as conveniently as possible to the various stores, to encourage shopping by automobile as well as by foot in the business district.

The all-day parker, in Spokane, would be expected to continue to use private off-street parking as he now does.

It is desirable, however, that long-time parking facilities should be removed from the business district by whatever means this can be accomplished.

Any discussion of traffic handling in a large city inevitably progresses to the matter of public transit. The



Application of "Great Blocks Plan".

panacea of rising fares has brought no health to transit systems. While operation costs are hardly more than double what they were two or three years ago, fares are three or four times higher—and still coach companies earn less than they did.

I suggest that fares be returned to the nickel, and that the cities carry the loss accruing from the 5-cent fare. I venture the prediction that this would at least double the use of transit vehicles and greatly cut down the use of private cars. The larger number of vehicles would increase the frequency of service on the lines, and this is the feature that attracts riders.

A Drastic Cure

In my opinion, various conventional methods of traffic control—even including the "traffic strainer" plan—are inadequate and mere palliatives. Our cities were designed originally as villages, for the horse-drawn vehicle. Motor vehicles, with their inordinate pressure on our streets, will destroy the congested areas as they have destroyed the gravel roads, if we do not adapt them to these demands.

Let us remember that our cities are young. They have untold thousands of years of life ahead of them, IF they solve these traffic pressures. Many of the cities of the old world range from 500 to 3,000 years old, or more.

How much older Damascus is than the 4,000 years of its written record, no one can tell. Excavations indicate that an unknown number of cities are buried beneath the present Damascus, each perishing because it failed to solve the problems of its existence. Our modern cities, too, can, and will, decay or perish if they so flagrantly fail to solve their problems that men leave them to build other cities.

Increasing congestion, creating avoidance of the business center, eats at the life of the central business district like a cancer. It can be fatal to that center if its cure is not undertaken in time.

The "Great Blocks" Plan

The permanent solution is to rebuild the downtown sections of our cities, on a piecemeal basis, reconstructing one blighted area after another, until the whole is finally rebuilt. The unit would be what may be called the "great blocks" plan.

With city blocks 600 feet each way, it will be possible to provide enough space in the interior courtyard for all the automobiles of people doing business in each block, and thus take parked cars off the streets. Such a great block can be nested into four blocks of present size, usually around 300 feet each way, without disturbing the general plan of the city. At the same time it affords an opportunity to widen the streets adequately, to meet the need of traffic flows.

The big suburban shopping centers, with their enormous parking areas, are a modified form of the "great blocks" system. Unless this trend is checked, these neighborhood centers will sap the life out of the congested downtown areas. Then, when it is too late and much of these

(*Continued on page* 183)

* Chairman, Spokane City Plan Commission, 1928-1944; chairman, Washington State Planning Council, 1934-1944; member and chairman, Pacific Northwest Regional Planning Commission, 1933-1944; national president, 1938, American Society of Planning Officials; honorary life member, American Institute of Planners, Northwest Chapter.

Inspectors use an Exploroscope to examine the voids that have developed behind the wall of the 40-year-old reservoir.

Using the same inspection holes, workmen apply soil-solidifying chemicals to the subbase behind the concrete slabs.

Subsoil Stabilization Saves

Chemically developed stone foundation restores failing water reservoir and checks 30% leakage loss

By WILLIAM B. JOHNSON
Water Department Supervisor
and
JOHN O. FULMER, Jr.
Chief Chemist
Easton, Pa.

THE DEMAND for more water is an old story to municipalities in this part of eastern Pennsylvania and apparently equally familiar to other cities where business and industry are thriving. But the story of the way that a city rehabilitates an outworn but badly needed portion of its water works without resorting to a special bond issue, increased water rates, or other unpopular methods of financing is a new one.

Such is the story we can tell in Easton. Our population has exceeded 36,000 persons in the past few years; our industries have been growing; and our home construction has continued to expand. In the face of this growth, Mayor Robert W. Morse and the City Council decided that the time had come to strengthen our water system.

40-Year-Old Reservoir

Requiring our most immediate attention was our North High Service Reservoir. This storage facility is an auxiliary reservoir with a capacity of approximately 1,000,000 gallons, and is located high in the hills north of the city. The reservoir is 100 feet square at the top, 15 feet deep, and its sides slope at a 1:1 ratio so that it measures 70 feet square at the bottom. It is nearly 40 years old, built of concrete poured on loose rock and gravel and with the usual expansion joints. The depth of the concrete ranges from 6 inches to 24 inches.

Over a period of years, portions of the subbase that supports the reservoir have been eroded and washed to the bottom of the sidewalls, creating voids behind the wall slabs. Repeated freezing and thawing have heaved many of the side slabs as much as 6 inches and forced some of the slabs to overlap.

Although the reservoir was designed to hold 1,000,000 gallons, this capacity was cut at least 30% because of seepage through sidewall cracks. Therefore, the current restoration actually increased the usefulness of the facility by 30%.

To do the corrective work, the city retained the Manu-Mine Research and Development Company of Reading, Pa., specialists in subsurface soil stabilization and reservoir construction and rehabilitation. This company was instructed to make a complete examination of the reservoir and to rehabilitate it by modern soil-stabilization methods.

The project began in August of last year when we emptied the reservoir to examine its condition. The company's engineers, C. W. Stickler, Jr., C. A. Landsidle, and H. L. Luke, together with Mayor Morse and the authors, found that on the south side of the reservoir, eight slabs had horizontal cracks extending across the entire width at about 3 feet from the top. The east and west walls were in

Before "shot-creting," in which a 3-inch concrete covering is applied, joints are sealed with specially prepared compound, and welded wire mesh is secured to the slabs.

40-Year-Old Reservoir

substantially the same shape. Moreover, the upper portions of these cracked slabs had heaved for an average of 4 inches.

Subsoil Examination

The next step was to make a subsoil examination. For inspection purposes, 196 holes, 2 inches in diameter, were drilled through the walls of the reservoir. These holes later served as a means of filling the void spaces and injecting the chemicals for solidification.

To determine the extent of the void, the engineers used the Manu-Mine Exploroscope. This is a new periscopic mining instrument which can be inserted through the drill holes and permit inspection of the voids. A 21-cp lamp and prism in the instrument permits inspection of areas behind tunnel or shaft linings, roadway slabs, reservoir linings, or other spaces heretofore considered inaccessible. If the void is large, another Manu-Mine device, a 250-watt, mercury-vapor lamp can be inserted through an adjoining drill hole to better illuminate the area for observation.

This exploration detected large voids, measuring 13 inches or greater, located near the top and decreasing in size towards the bottom. This defect had been created by erosion of the subbase along the length of the side walls.

Actual rehabilitation of the reservoir began the first week in September. All areas of the reservoir were sounded, and all loose and disintegrated concrete was removed with an air-operated chipping hammer. This operation permitted removal of the damaged material without injury to the sound concrete beneath. Then a sandblast machine, a product of the Air Placement Equipment Company, cleaned the entire surface. The cracked slabs were hydraulically jacked back into proper position and the loose gravel and rock was washed away.

Sand was then blown in behind the slabs through the 2-inch exploratory drill holes, completely filling the voids. In all, 12 tons of sand was blown through 272 holes to reinforce the foundations of the slabs of the reservoir sidewalls.

Three reinforcing rods, 1⅞ inch in diameter were inserted at the joints of the badly broken slabs in order to insure the security of the two sections. The joint-sealing procedure used by the Manu-Mine crews was thorough. First, a heavy mastic sealing compound was packed into the joint space. The joint was then brushed with a light sealing compound, covered with an 8-inch strip of 12-ounce duck, and topped with another paint coat of the light sealing compound for effective watertightness.

Solidification of Subsoil

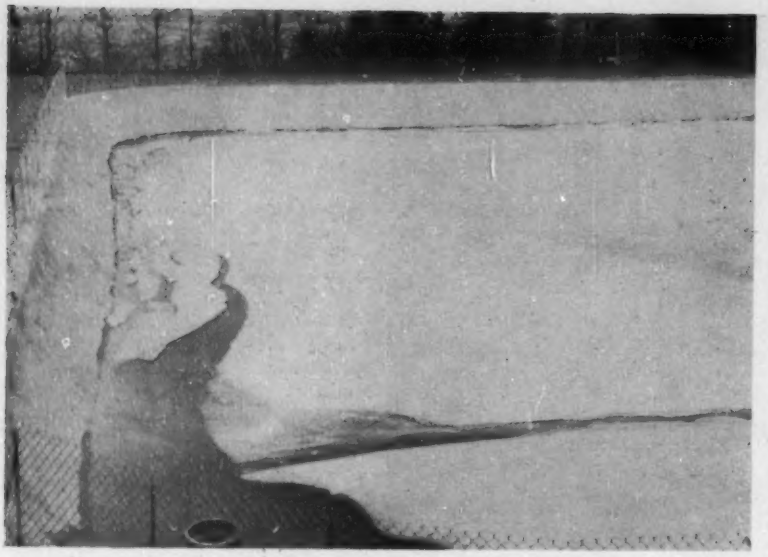
When the slab was realigned and the voids filled, the repair crew began the job of solidifying the sand and subbase behind the slabs. In this process, chemical solutions are inserted into the soil, precipitating into a silica gel which penetrates the strata to form a sandstone-like mass which is impervious to water.

Consecutive, and sometimes simultaneous injections were made of two solutions through pipes driven to a predetermined depth. The reaction between the chemicals is instantaneous. The precipitating gel fills the minute void spaces between the soil particles, binding them into a solidified impermeable mass, ever-hardening and nonreversible in character.

Each application of soil solidification was individually designed for each location, based on representative soil analyses and tests. The chemicals have a waterlike viscosity and will travel in any void that will permit air or water to pass. The chemicals used are modified silicate of soda solution and calcium chloride. Both are combined with activating agents, depending on the nature of the subsoils encountered.

The holes through which the solidifying agents were inserted were those which the crews had drilled for preliminary examination. Both chemicals were pumped separately from 180-gallon tanks through a special mixing head which permitted them to unite in the soil and to immediately solidify into the rocklike mass. This, in effect, gave a rock base to the concrete slabs. Chemical injections, totaling 2,750 gallons, were made completely around the reservoir.

The final step in the rehabilitation work was to apply a 3-inch concrete covering by the "shot-crete" method. Before making this air-placement of



The restored reservoir is good for another 40 years of service.

the concrete, a 9-gauge, galvanized, welded-wire fabric, with wires spaced 6 inches apart, was secured to the old concrete.

By means of threaded pins fired into the concrete by a Drive-It gun, the crews fastened the fabric 1 inch above the concrete surface. As each section of the reinforcing fabric was laid, the area was covered by a 4:1 sand-cement mixture that was applied by Air Placement Bondactor equipment. The sand and cement, placed in separate compartments of a Mix-Elevator machine, were mixed automatically and conveyed to the hopper of the air-placement equipment.

About 20% to 25% of the sand was lost due to rebound, leaving a 3:1 mix in the applied concrete. The lining work required 32 tons of cement and 132 tons of sand.

On October 29, the Manu-Mine Research and Development Company completed the job, and one week later we began to fill the reservoir. The total cost of the engineering examination and rehabilitation was $23,400, including the cost of the chemicals.

The original investigations made by the city engineers indicated that voids beneath the slabs were primarily responsible for the original slab ruptures, and that an ordinary resurfacing job would have resulted in a similar condition in a short period due to the freezing and thawing action of the water in the voids.

The cost of the project amounted to only one-third more than the estimates submitted to the city for the air-placed concrete surface alone. The present work is in accord with good engineering practice and gives our city a reservoir whose value is equal to a new structure at a lower cost.

Cast Iron Pipe Century Club

ONE OF THE most unusual clubs in the world is happy to report "steady growth." The Cast Iron Pipe Century Club, whose membership is restricted to municipal and privately owned water and gas systems having cast-iron mains in service for a century or more, now has 60 members. Of these, 31 members which is more than half the enrollment, are in the water-works division of the club.

Since 1922, when Philadelphia became a charter member of the water-works division, water division members have been joining at the rate of approximately one a year. The record year was 1930 when four candidates—Detroit, Lynchburg and Richmond, Va., and Mobile, Ala.—presented their credentials and were accepted by the club.

Philadelphia, the charter member, recently made water-works news by putting an active tap on one of these old pipes, proving that age alone did not affect its usefulness.

Any municipal, or privately owned, water works or gas system, that can offer credentials that will prove its eligibility for inclusion on this roster, has been invited to submit its application for enrollment in this unusual club.

The club's only officer is a recording secretary, Thomas F. Wolfe, whose headquarters are at the Cast Iron Pipe Research Association, Peoples Gas Building, Chicago 3, Ill.

CAST IRON PIPE CENTURY CLUB
WATER ROSTER

City	*First CIP Installation*
Philadelphia, Pa.	1822
New York, N.Y.	1824
Winchester, Va.	1826
Wilmington, Del.	1827
Detroit, Mich.	1830
Lynchburg, Va.	1830
Mobile, Ala.	1830
Richmond, Va.	1830
Baltimore, Md.	1831
St. Louis, Mo.	1831
Nashville, Tenn.	1832
Pottsville, Pa.	1834
Reading, Pa.	1834
Wheeling, W. Va.	1834
Lancaster, Pa.	1835
Huntsville, Ala.	1836
York, Pa.	1840
Winston-Salem, N. C.	1842
Frederick, Md.	1844
St. John, N.B., Can.	1844
Troy, N. Y.	pre-1845
Zanesville, Ohio	pre-1845
Halifax, Nova Scotia, Can.	1846
Boston, Mass.	1847
Utica, N. Y.	1849
Pittsburgh, Pa.	1850
Albany, N. Y.	1851
Alexandria, Va.	1851
Buffalo, N. Y.	1852
Chicago, Ill.	1852
Syracuse, N. Y.	1852

Milwaukee Graduate Training Program

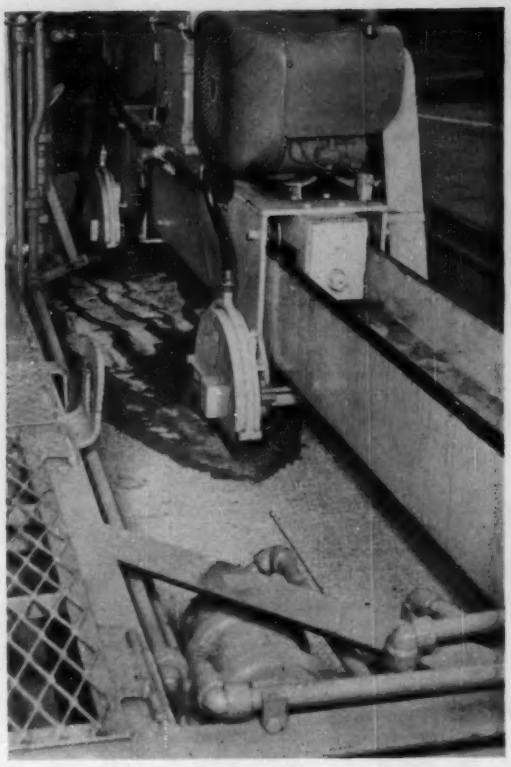
ENGINEERS in Milwaukee's Sewer Construction Division have enrolled in evening classes at the University of Wisconsin to complete requirements for a master's degree in Sanitary Engineering. Other city employees interested in road and street work are working toward a similar degree in Highway Engineering.

Thirteen engineers employed by the city began such courses in 1951. Two have received degrees; eight have completed academic work and are now writing theses; two are still doing academic work for their degrees. Only one man dropped out, because he left the city. In the past three years, five others have enrolled in these courses for advanced training in Civil Engineering.

According to City Engineer Lloyd D. Knapp, the work has benefited both the men and the city. Many of the men taking these courses already are assuming responsible supervisory positions. Employees of the U. S. Government, Milwaukee County, West Allis, Racine, and the Wisconsin Highway Commission, also have enrolled in this program.

A transverse sawing machine places contraction joints in recently laid concrete, used in the new Los Angeles Harbor Freeway.

Sawed Contraction Joints



A closeup of the multibladed Felker Di-Met Span-Saw capable of cutting a transverse joint in just 30 seconds.

MECHANIZATION seems destined to be pushing aside another colorful artisan in the old-time concrete paving crew. In the rear guard of every crew in the past was an aristocratic craftsman known as a joint cutter. He worked from a wooden bridge spanning the freshly laid concrete supported on the side forms. His duties required that he have an intimate and practical knowledge of the way that concrete sets, and long experience at finishing the joints so that they would not impair the smoothness of the pavement. A joint cutter, by indifferent work, could ruin the riding qualities of the best-laid pavements.

Today, we find this rear-guard workman disappearing, shunted aside by the impersonal whine of a concrete saw. Contractors find that with the saw they can cut the joints more cheaply; maintenance men find that the joints are easier to seal; and coldly impartial "bump-o-meter" tests show that the saws provide a much-improved riding surface.

The use of concrete saws for this new purpose apparently originated in Kansas. On an experimental road south of Topeka, the contractor's joint cutter experienced all sorts of trouble finishing the joint satisfactorily. Ultimately, a Kansas highway-maintenance engineer suggested the use of the concrete saw that his crews had been using to make pavement openings. The improvement was so marked that Kansas now permits use of the saw on all concrete pavement work.

Details of Operation

The saws use circular steel blades equipped with diamond-cutting edges. They usually cut a groove ⅛ inch thick and do the work without spalling or tearing the surface. The concrete must be permitted to attain a set equivalent to that reached in eight hours on a warm summer day. Most specifications require the saw to cut to a depth of 2 inches. Kansas, however, is now experimenting with a 1-inch cut that should speed the work markedly and produce corresponding reductions in cost. The need for skill and judgment still remains. The saws should be put to work during that optimum period when the concrete is hard enough to be sawed, yet has not been stressed enough in setting to form transverse cracks.

The saws require an ample supply of water to prolong their operating life. Normally, two men will be assigned to the saw, one to serve as operator and the other to mark joint locations and assist. To expedite matters, the crew can saw part of the joints.

Sealing the joints presents no difficulties if done soon after the sawing. Since the exposed crack is narrow, it can be somewhat difficult to clean if left open for an extended period. Joint sealing equipment should be supplied with a narrow nozzle if the sealing material is poured hot. If a cold-poured material is used, it should be inserted under pressure.

Costs and Availability

Costs for the work at present, range from 15 to 35 cents per lineal foot. The machines vary from small one-man, single-bladed types to large, transverse-rigged and multibladed units.

At present, five manufacturers supply most of these saws. They include: Clipper Manufacturing Company, 2813 N. Warwick St., Kansas City 8, Mo.; Cutcrete Corporation, Pasadena 8, Calif.; Felker Manufacturing Company, 1128 Broder Avenue, Torrance, Calif., Triline Company, Racine, Wis., and Briksaw Company, 1509 S. Michigan Blvd., Chicago, Ill.

Regional Shopping Centers for . . . Cleveland Westchester And Detroit Areas

An interior mall in the Northland shopping center before its opening.

THE NATION'S growing inventory of large regional shopping centers had three sizable additions recently, with the opening on April 1 of Westgate in Fairview Park in the Cleveland area, the opening on April 28 of Cross County Center in Yonkers, N. Y., and the opening on March 22 of Northland, in Detroit.

Westgate is a 44-store, 4,000-car shopping center, covering over 48.5 acres. The project, which features two large department stores, was built by an independent firm of shopping-center developers. It is easily accessible by six main highways which pass by the project, and is on regular routes of the Cleveland Transit System.

The $30,000,000 Cross County Center, which opened initially with 38 shops, restaurants, and other business places, is located on a 70-acre tract in booming Westchester County, N. Y., at an intersection of the Cross County Parkway and the projected route of the New York-Buffalo Thruway. Two 200,000-square-foot department stores are under construction, and six additional buildings will be started soon. A completed eight-story building will have a private hospital on the four upper floors. Tunnels are used for all truck deliveries, and all structures are connected by arcades, and facing proposed lawns and gardens. The developer, Sol G. Atlas, has estimated that 20,000 to 25,000 cars a day can be parked at the

An aerial view of Northland shopping center, designed by Victor Gruen Associates. Note careful planning for parking.

center when it is in full operation.

Northland, the "world's largest regional shopping center," costing $25,000,000, is the result of four years' intensive study, planning and building by the J. L. Hudson, 73-year-old Detroit department store. The central-station, air-conditioned center is initially occupied by 80 separate stores, and 15 additional ones are negotiating for leases, the Hudson store of 486,000 square feet being the central attraction. There is parking space, marked in luminous paint, for 6,500 cars, plus space for 1,000 employees' cars (expandable to 11,500 cars in all)—making this the largest, all-paved shoppers' parking lot in the world.

Center is Expendable; Uses 160 of 409 Acres

Northland is planned so that an additional 500,000 square feet of rental space may be added, but only 160 acres of the 409-acre tract acquired by the Hudson Company for the Center is being used for shopping and related facilities.* The rest will be developed in subcommercial, noncommercial and residential uses, to protect both the Shopping Center development and the residential area adjacent or near to the Center.

The cooperation between Township authorities and Northland Center, Inc., in rezoning, and with highway authorities, in the extension of traffic facilities, was harmonious. Property values in the entire area are reported to have risen steadily ever since the program was announced.

To achieve easy movement, the parking areas at Northland are divided into nine separate and distinct parking lots, each with its own entrance and exit pattern and system leading to the circulatory roads which serve the Center. Each of these lots is clearly defined, and separated by the introduction of raised walks which fan out from the Center like the spokes of a wheel.

Once a customer is out of his car and has reached the nearest building, he can visit every store protected from sun, rain, sleet, and snow by a colonnade around all the buildings and by covered walkways which connect all of the buildings to one another at logical and convenient points.

The Hudson store has a central pick-up station on the lower level parking lot so that customers can shop in the various departments and pick up their parcels at the station when they are ready to leave. The Center is also well served by bus services which deposit passengers so that they are protected from the weather.

All receiving, loading, and distribution of merchandise is carried on underground, where there is a complete truck route and loading dock pattern, adequate to service all of the stores, and out of sight and sound.

Throughout the planning of Northland, special emphasis has been given to the beautification of the grounds, the objective being to make shopping pleasurable and comfortable, in a gardenlike and esthetic environment.

Modern fanciful sculptured figures and fountains, a huge 500-foot mural, and extensive plantings (1,500 trees, 625 flowering trees, 1,900 evergreens, 18,000 ground-cover plants, and 23,000 bulbs) have been used to recapture the essence of charm.

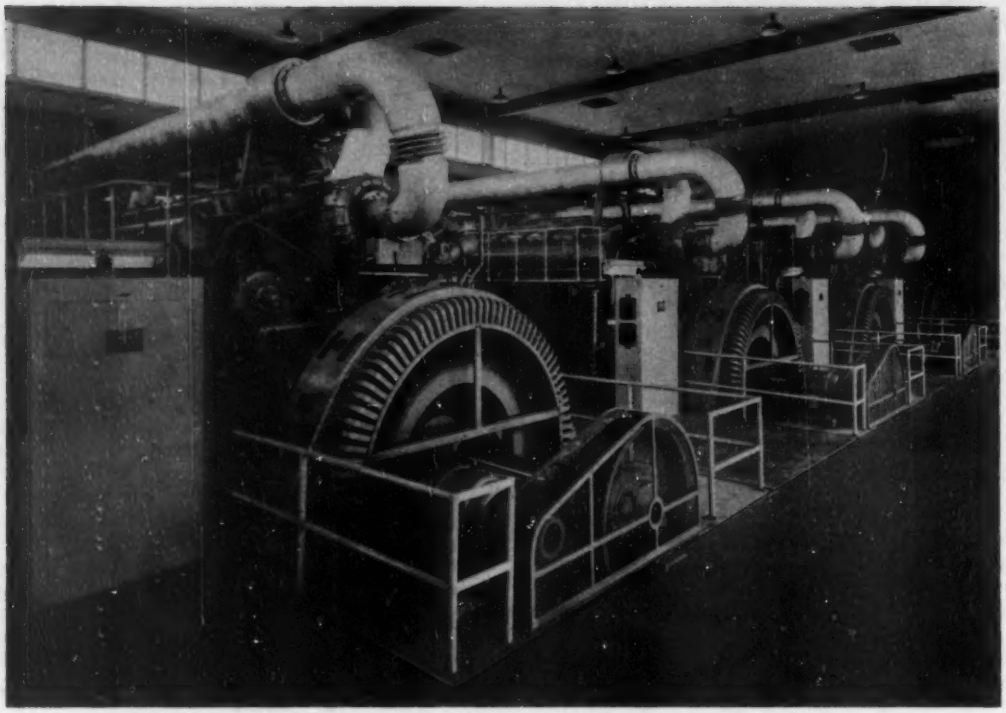
Among community facilities that are of special interest is a 250-seat auditorium, which will be available for community group or civic activity. Private dining rooms and kitchen with catering service will also be available.

Northland has its own fire department—a specially designed unit that can get anywhere in the Center in the matter of minutes. A special electrical distribution substation to supply the Center's peak requirements of 10,000 kilowatts, and the surrounding area, has been built by the Detroit Edison Company. Signal and auxiliary communication systems in the Center are extensive and complex. In addition to phone service, there is a silent paging system, a fire and watchman system, an electronic clock system, and a sound system for paging and for background music.

The paved area of 338,000 square yards cost more than $1,000,000, and included 100,000 tons of slag and 35,000 tons of asphaltic concrete. The surface consists of a 1-inch binder course and an asphaltic concrete wearing course of the same thickness. The natural subsoil base was first fine-graded and compacted with power rollers; over this graded surface a 1-inch layer of slag screenings was spread as an insulating course. On top of this subbase was laid a 6-inch slag base to support the bearing surface. The entire paving job was completed in 88 working days.

* The gross area of Northland Center under roof is 1,317,030 square feet, with more than 1,000,000 square feet classed as "rental." The rental space in square feet of other major regional shopping centers is as follows: Lakewood, Los Angeles, 750,000; Stonestown, San Francisco, 600,000; Northgate, Seattle, 600,000; Framingham, Boston, 550,000, and Evergreen Park, Chicago, 390,000.

Customers approach Westgate from many directions. Note bus on upper level discharging passengers at covered entrance to store.



The generator end of the four gas-diesel engines, which automatically convert to oil-diesel operation when gas pressure drops. The engine control panels are at the left of each unit.

Cheaper Kilowatts for Poplar Bluff Area

Automatic gas diesels team with spark-ignited supercharged gas engines to lower power generating costs in Missouri REA plant

By F. L. FRIEDLI
Project Manager
Cooper-Bessemer Corporation
Mount Vernon, Ohio

TEAMING AUTOMATIC gas-diesel engines with spark-ignited, supercharged, high-compression gas engines allows power stations to attain a new high in flexible operation. This method has proved itself at the new Green Forest generating plant at Poplar Bluff, a city of 15,000 in southeastern Missouri. The power plant, financed by REA, automatically converts from gas-diesel to oil-diesel operation when gas pressure drops. It switches back again when normal gas pressure is restored.

The prime movers in the $3,000,000 plant are four Cooper-Bessemer 16-cylinder engines. Each is rated 3,300 hp at 327 rpm. Two engines are automatically controlled supercharged gas diesels; the others, spark-ignited supercharged gas engines.

Operating Procedure

Operating procedure provides for running the automatically controlled gas diesels during anticipated periods of interrupted gas supply. The controls on these two gas diesels are arranged so that when gas pressure drops below a fixed level of 20 psi, the engine controls automatically and instantly convert the engine to oil diesel. Immediately after gas pressure is restored, the engine controls automatically convert to gas-diesel operation, operating on 5% pilot oil at full load. The spark-ignited supercharged gas engines are scheduled for operation during these periods of uninterrupted supply.

If, during these periods, greater generating capacity is needed, either of the automatic gas diesels can be converted to spark-ignited operation in one and one-half hours. This is accomplished simply by immobiliz-

ing the fuel-oil system and installing spark plugs. Performance records show that the engine generator units have an average fuel consumption of 9,398 BTU per kwhr on gas-diesel operation, and an average of 10,865 per kwhr on straight gas operation.

Natural gas is delivered to the station at 50 psi from the lines of the gas company who has its own meters and pressure regulator. The lines that deliver the gas to the plant are equipped with Foxboro gas meters.

Diesel fuel is stored in four 50,000-gallon outside tanks, fabricated by the Pittsburgh-Des Moines Steel Company. Two tanks are equipped with inner oil-heating chambers. All fuel is delivered by truck to a fuel unloading house through a 100-gpm Blackmer unloading pump and is metered by a Pittsburgh Equitable meter.

Fuel oil is drawn from the outside storage tanks by a gravity-fed Blackmer pump, which transfers fuel oil at 20 gpm. The unit automatically fills the four day tanks. The pump discharges through a common header to the Ross fuel-oil heat exchanger, after which the heated oil passes through the two U.S. Hoffman fuel-oil filters on its way to the day tanks. A fuel-oil meter precedes each day tank. A fuel-oil supply header has a bypass arrangement that controls the amount of fuel flow to conform with the demand for fuel by the engines.

Lube-Oil System

Each engine has a Blackmer 450-gpm lube-oil circulating pump that is driven by a 20-hp Ideal motor through Falk reduction gears. Oil for each engine is criculated through U.S. Hoffman lube-oil filters. In a continuous cycle, the system filters 7% of the total lube-oil supply, whether or not the engine is operating. Danger of condensation in lube oil is prevented by the use of an underground storage tank, since ground temperatures remain fairly constant day and night.

Lube-oil cooling is accomplished through a Kewanee-Ross heat exchanger that has a capacity of 414 gpm and which cools the oil from 160° to 143°. Temperature control for the lube oil is accurately maintained by means of a Foxboro controller unit that actuates an electronic relay system, a product of the Automatic Temperature Control Company. This system, in turn, operates butterfly valves in the bypass and in the circulating stream of spray water around the cooler. Water for the station comes from two wells on the plant property. Jacket water is first treated by use of a Permutit system.

Engine intake air is purified by American Air Filter units that function automatically and are self-cleaning. Intake silencers are of the Air Maze design; exhaust silencers are Maxim units. The interconnecting piping installation is constructed of Zallea lightweight, stainless steel pipe equipped with corrugated expansion joints which absorb all expansion strains. Air for starting is compressed by two Gardner-Denver units which deliver air at 250 psi into four 46-cubic-foot air-storage bottles.

A Leroi emergency gasoline-engine generator unit is used to start the first lube-oil pump. The generator unit is of the three-phase, 60-cycle type, rated at 100 kw and 480 volts. Only after lube-oil pressure is built up through the auxiliary pump unit can the operator turn over the engine with the starting air. Once the first engine unit is put on the line, electric power is transferred to the station's service bus bar.

The main generators are Ideal Electric units that are rated at 2,351 kw and produce three-phase, 60-cycle current at 2,400/4,160 volts. The exciters are 30-kw units, which are all driven by a V-belt pulley drive.

Each main generator is provided with a neutral grounding reactor. Lighting protection is provided by a surge capacitor. Generator leads run into a Westinghouse switchgear cubicle that is enclosed in metal and consists of a synchronizing panel, four generator and exciter panels, and totalizing and feeder-breaker panels.

The plant output is cabled to an outside substation structure whose primary bus bars feed two Maloney 7,500-kva power transformers and whose secondary bus bar is 69 kv. Oil-circuit breakers, controlled by transmission-line control panels within the plant, deliver 69 kw to two long transmission lines.

The main building is constructed of brick and steel with Transite covering and was designed to allow for future expansion. The communications system provides for radio contact by the plant's local transmitter by which the generating facilities are in constant contact with transmission-line crews, utility workers, and distribution member co-operatives.

Managing the new generating station is James W. Owens, Jr. The entire plant is operated by 12 men under the direction of Superintendent Howard J. Clutts.

Town Meetings Come To Philadelphia

AN EXCITING VENTURE in civic affairs is now underway in Philadelphia which reintroduces to a large city an old and valued American concept.

The Citizens' Council on City Planning in Philadelphia has been holding a series of Town Meetings in each of the four major areas of Philadelphia during the winter and spring. These meetings focus attention on the public improvements scheduled for the next six years in the Capital Improvement Program drawn up by the City Planning Commission and adopted by the Philadelphia City Council.

Mayor Joseph S. Clark, Jr., appropriate department heads, local City Councilmen, and the Director of the City Planning Commission attend these meetings to discuss both the policy and the specific projects in the Improvement Program. Each meeting is jointly sponsored by the largest civic or business group in the area and the Health and Welfare Council, along with the Citizens' Council on City Planning.

On entering the auditorium for one of these meetings each member of the audience receives a simplified version of the Planning Commission's Capital Program, containing a separate list of the projects scheduled for his own neighbordhood, as well as a map of his neighborhood with the proposed improvements located on it; also included in the material is a list of city-wide projects. This material, prepared by the Citizens' Council, is used for discussion purposes and may be kept for reference after the meeting.

The meetings open with a presentation by Mayor Clark who reviews briefly the over-all Capital Program. Edmund N. Bacon, Executive Director of the City Planning Commission, discusses the highlights of the Program for the specific neighborhood involved. Then a question-and-answer period led by a panel of neighborhood leaders follows, with the city officials and department heads being able to observe at first hand the interest in particular projects.

The meetings have been unusually lively and well-attended, and represent a unique contribution to civic affairs in modern day urban life.

AARON LEVINE
Executive Director
Citizens' Council on City Planning
Philadelphia, Pa.

Robert B. Morris (left), Glencoe Village Manager, played a leading role in developing the new billing system. He was assisted by Robert L. Hegel, administrative trainee (right), and by Ethel C. Adams, operating the Burroughs 400 Sensimatic billing machine.

New System Pays for Billing Machine

Glencoe, Ill., shows how new water-billing system will save village $1,800 annually

By ROBERT B. MORRIS
Village Manager
and
ROBERT L. HEGEL
Administrative Trainee
Glencoe, Ill.

MORE THAN EIGHT MONTHS of personnel time (1,350 working hours) are saved annually through reorganization of the water-billing system in the residential village of Glencoe, Ill. (population 8,000). A new bookkeeping machine and all materials necessary to convert to a different billing system will have paid for themselves in less than two years.

Main features of this billing system, which was introduced in June 1953, are: billing on postal cards; visiting homes for meter readings only once every three-months; leaving doorknob cards on which residents who were not at home mark their own water-meter reading; estimating bills where readings are not available; using "follow-up" slips for delinquent bills, and logically reorganizing water-account codes.

Former System was Costly

The old quarterly billing procedure required separate bills for water and rubbish accounts. The billing machine then used was not equipped to print either the date of the billing or the date of the end of the discount period. One biller could complete all the necessary operations on the "first" billing of an average of 1,800 water and 1,000 rubbish accounts in five working weeks.

Under the old system some 300 to 400 water accounts each quarter could not be read on the first trip. Frequently the meter readers made as many as seven visits to a single residence before the meter could be read.

The water ledger accounts were formerly filed by streets. Meter readers did not follow the order of the streets. The biller, upon receiving the loose, filled-in meter-reading sheets, rearranged them for coordination with the account ledgers and then billed from the meter-reading sheets by streets. Considerable skipping around was necessary to finish each billing.

Heretofore all who paid by the twentieth day of the month received discounts of 6% computed on the billing machine. First delinquency notices were mailed on the twenty-first day after billing. Then water-department employees personally delivered second and final "red-lettered" notices to the delinquent's homes 15 days later. About 70 final notices were delivered during an average quarter.

As payments came in, the biller located the account card by using the name and street address of the payer, instead of using the account number. Originally, the code had been set up on a numerical basis, with numbers from 1 to about 1,000. Gaps left for new homes proved insufficient. For example, Account #309 eventually became the basis for designating about 70 homes. The most detailed was 309W30AAA. The system of account numbers became unreliable.

Population Growth Forced Change

By early 1952, the number of water accounts had increased to about 2,000. An entirely different system was set up by greater mechanization, thereby reducing personnel costs. Specific suggestions for setting up the new system were made by water-meter readers, the billing clerk, the finance officer, and outside auditors.

The Village Manager recommended that the Village Board purchase a new accounting machine (Burroughs Accounting Machine for Utilities Sensimatic) for approximately $3,000. If thought desirable, payroll and other accounting procedures could easily be placed in the new machine. The deciding factors in the purchase of the machine were flexibility, ease of operation, and cost. The new system started with the April-June 1953 billing.

A single, neat, postcard bill containing both water and rubbish charges reduced individual postage from 3 to 2 cents—a saving of $80 annually. Placing both water and

rubbish charges on one bill eliminated double addressing, stuffing, and sealing envelopes. Printing the discount termination dates eliminated hand-stamping 2,000 bills.

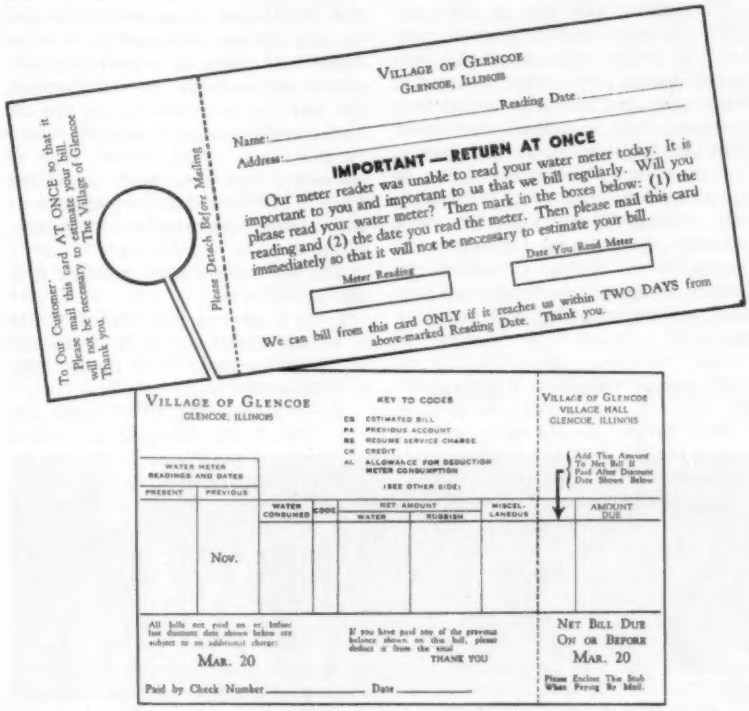
Discount for promptly paid bills is calculated from a rate chart, thus eliminating machine computation of each discount. The total amount due of both the water and rubbish bills then appears at the far right of the card on a detachable stub that the consumer encloses when paying by mail. Also on this stub is the account code number, which identifies the house location without a complete street name and number. The stub of the postcard bill also carries the date on which the net bill is due and the amount to add if the bill is not paid within the 20-day discount period. These two items are printed in red. A red arrow points to the amount to be added to the net bill after the discount date.

Water consumption is given in 100 cubic feet instead of cubic feet. This eliminates four digits on every bill for the present and the past readings, or eliminates a total of about 8,000 digits per quarter billing. Water consumed is listed on the left-hand, larger section of the bill. "Group" rather than "individual" rates simplify computing charges.

Two meter readers now make the quarterly meter-reading rounds just once. They leave doorknob cards where readings cannot be obtained. Residents read their own meters and mail the cards at Village expense.

Briefly, all streets are arranged alphabetically and given numbers beginning with "1" (Adams Avenue) and continuing to 104 (Woodland Avenue). In all cases the code number will be this street number followed directly underneath by the individual house number. Because house numbers do not change and no two houses on the street will have the same house number, no "gaps" need be left in an account-numbering systems.

An estimated 1,350 working hours are saved annually by the two meter readers and one biller under the new system. Purchasing the new machine and changing all the addressing-machine plates, card bills, delinquent notices, and doorknob cards cost Glencoe $3,383.99 during the first year. Work hours saved during this same period, however, have saved about $2,100 in personnel costs. After 21 months of operation the entire new installation will have paid for itself in reduced personnel costs. Annual expenditures then should be approximately $300, annual saving in personnel time $2,100—a net annual saving of about $1,800.



To Our Customer: Please mail this card AT ONCE so that it will not be necessary to estimate your bill. The Village of Glencoe Thank you.

Please Detach Before Mailing

VILLAGE OF GLENCOE
GLENCOE, ILLINOIS

Reading Date _____

Name: _____

Address: _____

IMPORTANT — RETURN AT ONCE

Our meter reader was unable to read your water meter today. It is important to you and important to us that we bill regularly. Will you please read your water meter? Then mark in the boxes below: (1) the reading and (2) the date you read the meter. Then please mail this card immediately so that it will not be necessary to estimate your bill.

Meter Reading

Date You Read Meter

We can bill from this card ONLY if it reaches us within TWO DAYS from above-marked Reading Date. Thank you.

VILLAGE OF GLENCOE
GLENCOE, ILLINOIS

KEY TO CODES
ES ESTIMATED BILL
PA PREVIOUS ACCOUNT
RS RESUME SERVICE CHARGE
CR CREDIT
AL ALLOWANCE FOR DEDUCTION METER CONSUMPTION
(SEE OTHER SIDE)

VILLAGE OF GLENCOE
VILLAGE HALL
GLENCOE, ILLINOIS

Add This Amount To Net Bill If Paid After Discount Date Shown Below

WATER METER READINGS AND DATES				NET AMOUNT			
PRESENT	PREVIOUS	WATER CONSUMED	CODE	WATER	RUBBISH	MISCELLANEOUS	AMOUNT DUE
	Nov.						

All bills not paid on or before last discount date shown below are subject to an additional charge.

MAR. 20

If you have paid any of the previous balance shown on this bill, please deduct it from the total

THANK YOU

NET BILL DUE ON OR BEFORE MAR. 20

Please Enclose This Stub When Paying By Mail.

Paid by Check Number _____ Date _____

The doorknob card (top) asks the consumer to record and mail his own meter reading. New post-card bill form saves Village of Glencoe $80 in postage per year.

Reading Lists Help Alhambra Employees

RONALD E. DUNN, Personnel Director, Alhambra, Calif., has forwarded to THE AMERICAN CITY a useful training aid recently issued to help Alhambra employees prepare for promotional examinations.

The training aid is composed of reading lists given to all members of the police and fire departments, including a reading list on supervision, management, personnel and public relations, available for employees of other departments.

Mr. Dunn reports that the users of the lists are impressed that there is no guarantee of specific test items being based on the particular readings recommended, but that the books and publications are representative, and should be helpful in developing a background of information and attitude.

APCA Celebrates Golden Anniversary This Month

AT ITS National Citizens Conference on Planning, to be held in the Neil House, Columbus, Ohio, May 16-20, the American Planning and Civic Association will celebrate the completion of the first half century of its useful life.

Functioning from 1904 to 1935 as the American Civic Association, and since 1935 as the American Planning and Civic Association, APCA has devoted its main energies over the years to the responsibilities and activities of citizens organizations for community improvement.

This month's Golden Anniversary meeting will include a dramatic opening session in which Howard Menhinick will give the Keynote Address on "After Fifty Years, What Next?" The entire program is addressed to civic leaders and will stress Citizen Responsibility in Planning; New Standards in City Development; the Federal Role in Urban Renewal; the Future of the Downtown District; the Place of Business and Industry in Metropolitan Planning; Expressways and the Central Business District; Supreme Value of Mass Transportation; Consolidation of City and County Services; Conservation of Natural Resources; and Protection of Parks from Unrelated Encroachments. There will also be the Zoning Round Table.

The full program is available from the APCA headquarters in the Union Trust Bldg., Washington, D. C., Harlean James, Executve Secretary.

Park Ridge, Ill., Cleans Sewers by Contract

The author (right) examines equipment used to clean Park Ridge's sewers.

By DeSOTO B. McCABE, Jr.*

A WELL-BALANCED, enlightened, dynamic city management recognizes the value of the city's doing its own work if need be. It also recognizes the value of the city's contracting with an outside organization to do certain work if it serves the best interests of the people. Park Ridge, a city of 17,000 in northwestern Illinois, has benefited from using both methods.

The city manifested leadership in planning and executing work with its own forces when it constructed a completely automatic, underground water plant (See the August 1951 issue of THE AMERICAN CITY, pp. 106-107), and also established a $600,000 street-improvement program financed by anticipated motor-fuel tax funds. It then demonstrated wisdom by adopting a less heralded but equally important policy by entering into a contract with a private organization to clean its sewers.

I had been city manager of Park Ridge for a relatively short time when the spring rains of 1950 convinced us that one of the city's most pressing problems was flooded basements and curb-to-curb ponding of water after even moderate rainfalls. Hundreds of telephone calls would jam the city hall switchboard, all from irate taxpayers demanding that the city send forces to pump the water from their basements. To use the vigorous language of our youngsters, a citizen can "blow a fuse" when rain water floods his furnace.

Throughout the rest of 1950 and 1951 our sewer crews worked manfully to clear inlets, manholes, and sewer mains. We were successful with inlet and manhole structures; however, our equipment was woefully inadequate, slow, and costly. The clearing of thousands of feet of blocked sewer mains was beyond us. Our Public Works Superintendent John D. Hooper and I spent many weary hours trying to select the proper equipment, methods, and policies to cope with this difficult problem.

Contract Cleaning Explored

Our "break" finally came when I learned of the "big inch" sewer work being done for industries by the National Power Rodding Corporation, of Chicago, Ill. This outfit has developed new and superior truck-mounted equipment and is unusual in its field in that it offers both the equipment and trained personnel as a cleaning service. The equipment, however, which is big and fast, was far too expensive for our budget.

Consequently, we arranged a meeting so that we could explain our problem to Ralph Rand and Harold Rudich, developers of the equipment. On May 14, 1952, the company and the city began a pleasant and continuing service relationship, first on a per-diem, later on a per-foot, basis that is still in force. By this method, the city has been able to get the advantage of equipment that it normally could not afford, skilled men to operate it that it normally could not attract, and thorough performance at prices that otherwise would be prohibitive.

The net results as of January 1954 are as follows:

1. At a total cost of 18¼ cents per foot, 33,951 feet of 12- to 24-inch sewers have been rodded and flushed clean.
2. At a total cost of 57 cents per foot, 3,333 feet of 12- to 24-inch sewers have been rodded, bucketed, and flushed.

The city now enjoys a gratifying decrease of telephone calls from flooded householders—from hundreds of calls after a moderate rain to two or three after a heavy rain. With this service available on a "when and where needed" basis, and with homeowners and sewer crews being educated to use copper sulphate for root control, Park Ridge now rests easy during rainstorms.

* Mr. McCabe is former city manager of Park Ridge, Ill. He is now president of Revere Engineering Company, Chicago, Ill.

Getting A Fire Department Equipped for Fighting

Regular Fire Department equipment consists of one 100-foot American-LaFrance aerial ladder truck, two 1,000-gpm and one 500-gpm pumping engines, and a first-aid Chevrolet panel truck.

By DEWEY SHEPHERD
Fire Chief
Vincennes, Ind.

VINCENNES, IND. (population 18,897), has three fire stations and 30 paid firemen — including the writer, who was made Chief in 1946 after 16 years' service.

Our equipment and fire stations were in bad condition in 1946 and there wasn't any money for repairs. To put more heart in my department, I transferred $700 from several appropriations and purchased three electric refrigerators, one for each fire house. The painters' union gave us permission to paint the inside of the stations ourselves.

Next, we took money from our own pockets and gave a chicken dinner for the members of the Board of Public Works and Safety, the City Councilmen, and a few prominent citizens. After dinner, I proposed that my appropriation be raised $30,000, to permit me to do a good job. In view of the excellence of the meal, they could not say no—nor did they say yes.

Budget Victory Won

When the time came to make the budgets, I included the $30,000. The Council split, but after much discussion, the appropriation went through.

When the time came for objections, the Mayor said, "Now over here we have Mr. Dewey Shepherd, the head of the fire department of your city. As his appropriation is higher than any other department in the city, we will take it up first."

Of course, I thought they would jump all over me. But to everyone's surprise, the spokesman for the taxpayers declared, "We did not come to fight the fire department. We feel that they need new equipment and money to repair the fire stations. We do not have any objections to make." Was that a relief to the Mayor, Council and myself! It pays to keep your public well informed. Under Mayor Barr's administration, we ordered one 100-foot aerial ladder truck (American-LaFrance).

Then came election year, 1948. Mayor Barr did not seek re-election. William Betz was elected Mayor and I was reappointed Chief of the fire department. Mayor Betz, like Mayor Barr, wanted only an efficient fire department. He bought beds for all three houses and paid for them with his own money. The firemen and I certainly appreciated that.

In fact, it was in his administration that a 0.04 tax levy was approved for fire-department equipment. This has been continued every year since 1949 and provides about $7,000 a year—or a piece of fire apparatus every four years. If more cities did this, more cities would have up-to-date fire departments.

We moved ahead under his administration, attempting to give the public every possible service. Next, we went into first aid. I appeared before the county commissioners and, after several meetings, they allowed me $1,000 on a panel truck to be used on emergency runs.

Then we had to have a resuscitator. We went to the Lodges, the Unions, and the citizens, and raised enough money to purchase a Chevrolet panel truck, equipped with an E & J resuscitator, first-aid cabinet, oxygen, and a folding cot.

Later we added a 1,000-gallon American-LaFrance pumping engine for Headquarters. But we also needed new equipment at fire stations No. 2 and No. 3.

We were making fire runs out in the township, so I went to the Vincennes Township Trustee for new equipment for my department. After several meetings, the township bought a 500-gallon American-Marsh pumping engine to be used in the township and the city. This took care of fire stations No. 2 and No. 3.

At the next election Gene Stocker was chosen Mayor, and again I was reappointed Fire Chief. The only change I made was to move the men up, and then put on replacements, as my regular men retired. Mayor Stocker wanted only harmony and efficiency, and in 1953 we bought another 1,000-gallon American-LaFrance pumping engine.

Neither I nor my men mix in politics. You can't have a good department and do that. The department that is in politics makes a lot of changes after every shift of administration; the chief, assistant chiefs, and captains are demoted, and perhaps at the next election they're returned to their proper rank. Meanwhile the firemen are fighting each other for the top jobs.

I suppose that every fire chief has his troubles about the brand of equipment to purchase. We have had good service with the American-LaFrance equipment and because we have three pieces, we only need one spare tire and a minimum stock of parts. Last year's fire loss amounted to only $12,832.

Reserve fire-fighting equipment in Vincennes, Ind., consists of one 750-gpm and one 450-gpm pumping engine and a 1940 Ford truck fitted with a booster tank.

Outside Agency OKs

Houston's New Purchasing System

By GERALD N. HARDY
Executive Director
Tax Research Association
Of Houston and Harris County, Texas

THE TAX RESEARCH ASSOCIATION has made many surveys and studies out of which have come substantial improvement, efficiency, and enlightenment in matters of local government. Of all these studies, the one on the city purchasing system of Houston, stands out as a project whose savings in dollars can be followed, understood, and measured.

The administrative staff of TRA has just concluded a sharp scrutiny of what has happened at City Hall since the purchasing system recommended a year ago went into effect. Did it save money? Was centralized purchasing worth the effort?

The new purchasing methods saved over $281,000; the additional cost of staffing the purchasing department to make these savings possible was about $31,000, making the net savings to the city in excess of $250,000.

Fewer Purchase Orders in 1953

One of the chief criticisms of the old system was that the city was not taking advantage of bulk buying, and that it made many purchases to avoid true competitive bidding, even though such practices cost the city more money.

There were 17,593 purchase orders written in 1952, and only 15,051 in 1953.

Another measure of improvement is the step-up in the number of public bids taken by the purchasing department last year, 158 as compared with 44 in 1952. Not only have competitive public bids expanded in number and scope, but also competitive informal bids on smaller items of purchase have been introduced wherever possible.

Complaints

Builders and subdividers who did business with the city complained that they were being delayed because the city purchasing department, in switching to competitive bids, couldn't get deliveries of water-system fittings rapidly.

A check with a number of city department heads today shows that they are now sold on the advantages that the new centralized purchasing system has brought.

City Controller Roy B. Oakes sums up the situation this way: "The spirit and letter of the city charter are now being faithfully carried out, with savings to the taxpayers. It was to be expected that there would be department top men who would be inclined to skepticism of the new system. A man gets to be friendly with people with whom he does business — a wholly natural and proper thing. When something happens that loses the business for the people he's become friendly with over the years, naturally he will be skeptical of the new system. But time has proved the new system is sound and economical." The city controller is a former city purchasing agent.

What Price Checks Show

Tax Research Association checked prices paid by the city for water-department items under the old and the new purchasing systems. Its findings are noted in the accompanying box.

Were the lower prices the result of a general price reduction on such items? Was there a possibility that the city would have obtained lower prices even under the old system?

A double-check showed there had not been a general price reduction and that the lower prices were the direct result of the application of sound purchasing methods.

Operating Cost Up

The 1953 cost of running the city purchasing department totaled $80,643. This represents a $30,950 increase over the 1952 operating cost. Biggest increase item is salaries of four buyers who were added to the staff.

This extra cost of running the Purchasing Department was quickly offset. For instance, by using the bid system, the city saved an estimated $22,109 in 1953 on tires alone, spending $57,885 for what would have cost $79,994 under the old system.

The kinks in Houston's purchasing system have been ironed out gradually. Results are in the form of speedier deliveries, increased number of suppliers, and dollars saved.

Comparison of Prices for Water Department Items Under the Old and New Systems

Item	*Cost* *Old System*	*New System*
Fire Hydrants		
5-foot-bury	$154.80 (late 1952)	$142.17 (Sept.-Oct. 1953)
4-foot-bury	162.60	149.62
Hub-End Gate Valves		
2-inch cast iron	20.40	17.64
6-inch cast iron	54.45	45.72
8-inch cast iron	84.15	70.66
12-inch cast iron	174.20	148.68
Tapping Valves and Sleeves		
8 inch x 8 inch	149.29	125.37
12 inch x 12 inch	175.75	147.63

Make Water Works Structures

Neighborly

Community hostility to water-works buildings can be overcome by skillful architecture and an active public relations program

By HELEN G. FOONER
Director of Public Relations
Jamaica Water Supply Co.
Jamaica, N. Y.

When Floral Park, N. Y., learned that its new water works would blend with the residential character of the village, local opposition to the facility soon vanished.

LIVING "down by the water works" may begin to mean an address in the most attractive part of town, if the example of the Jamaica Water Company is to be followed. A well-developed public relations program, coupled with thoughtful architectural design of water-supply facilities, has made these improvements welcome additions even to residential areas with strict and exacting zoning standards.

Floral Park, a suburb of New York City, with a population of about 15,000, was scheduled to be the location of the company's new pumping station. Here would be located a two-well, 1,000,000-gallon storage tank project. Today, this improvement is actually welcomed instead of being opposed bitterly as it was when the project was first introduced. In nearby North New Hyde Park and in North Valley Stream, communities equally insistent on retaining their purely residential character, the same thing is happening.

Why? The accompany illustrations tell the story of a completely "new look" in the water plants themselves and a carefully planned effort by the company to keep its customers informed, encourage their participation and cooperation in planning, and thus to assure their enthusiastic acceptance of the construction results.

About two years ago, this 67-year-old company, which now serves 500,000 people in its 40-square-mile territory on Long Island, began making plans for a major program of new construction. Jamaica Water Supply is in an area that has experienced phenomenal growth in population and residential building during the past ten years.

To meet these demands the company has undertaken a $3,850,000 expansion program, the largest in its history. Scheduled for completion by the end of 1954 are 13 new wells, four new storage tanks, new booster pumps and regulating equipment, and additional mains and fire hydrants. The result will be a 37% increase in the company's water supply—from present maximum of 65 to 89 mgd.

The announcement of this program was pleasant news to Jamaica Water Supply's customers, *except*, that no one wanted the "water works," at least not the usual kind, in his front yard. This reaction of Floral Park is typical.

The company first acquired property for a well site and storage tank in this community in November 1952. When news spread that the company

In other areas, pumping stations will resemble this thrifty, modern-looking house.

Floral Park's Mayor Walter D. Lawrence breaks ground for the new water station. He is flanked by Jamaica Water Company's President Daniel J. Hennessy (right) and Vice-President Peter Ley.

had purchased land in the area and when, soon after, a well-drilling rig appeared on the site, there was quick unfavorable reaction. Both the mayor of the village and the company were besieged with calls and letters from angry property owners. The fact that these were the property owners who had been equally vociferous in their demands for more water had been forgotten.

At this early date, the company had not yet completed plans for erection of the building and storage tank. As a result, the company's first and, it is now realized, premature application for a building permit *without architectural plans* was rejected. Droves of citizens attended a hearing before the village zoning board to protest that a water station in the community would be an eyesore and would ruin the value of properties in the neighborhood.

Community Help Enlisted

At this point, the company decided to call a halt until architectural plans would be complete and the community could be given the whole story. Company officials conferred with village and civic leaders to develop an acceptable type of structure. The plans finally selected—and there is no denying the fact that citizen reaction in Floral Park had a good deal to do with the final decision—were for a building and landscaping which would do credit to any residential community.

The new Floral Park water works will be a white, colonial-style structure with yellow shutters and will look precisely like an attractive private home. The 1,000,000-gallon storage tank beside the plant building is to be partially underground and will have a grass-green concrete top. Even the fencing and ample, attractively landscaped plot will strike a residential rather than institutional note.

Before applying again for a building permit, the president of Jamaica Water Supply sent an individual letter to every property owner in the village, describing the company's plans. The mayor and other village officials were given a preview of the architect's drawings.

Attitude Changes

When the matter again came up before the zoning board, public interest and attendance was as high as on the first occasion, but public sentiment had changed considerably. There were congratulations instead of recriminations, and Jamaica Water got its building permit.

The start of construction of the Floral Park station was made a community occasion. The mayor of the village officiated at a formal groundbreaking ceremony in the presence of representatives of civic associations and public works, health, and school officials. The event was fully reported by the local press which carried pictures of the planned new building and described the greatly improved service which the new installation would make possible.

Engineering Details

From a water-works engineering standpoint, Floral Park is getting a splendidly designed system. It will have two wells, placed by the Layne-New York Company. One will be 100 feet and the other 400 feet deep; each tapping different aquifers in Long Island's rather unusual geological formation. Each well will be equipped with a Layne and Bowler deep-well turbine pump, able to deliver 1,400 gpm (gallons per minute).

Pumping Equipment

In addition, the station will have three Fairbanks-Morse centrifugal booster pumps. Two pumps can deliver 1,200 gpm and the other double this amount. The booster pumps will be completely automatic, while the deep-well turbine pumps will be semiautomatic. Both will use Ultrasonic Corporation controls.

The system is designed to use booster pumps and a storage tank on the ground rather than elevated storage facilities because of the strong objection to such structures. The station is not being equipped with standby power since the Floral Park area is so thoroughly interconnected with other parts of the system and with neighboring municipal systems that standby power performs no real service.

The company plans a community "open house" with press coverage when the new station is ready to go into operation. Families in the area will be invited to inspect the plant, company executives will be on hand to explain its operation, and refreshments will be served.

The pattern developed in Floral Park has been adapted, with necessary variations, in other communities. Essentially, it consists of keeping the community informed by explaining fully what you plan to do; what it will mean in terms of service; what it will look like; and how much it will cost.

On current construction projects, for example, as soon as a working crew or any piece of machinery appears on the site, a billboard is erected to tell the community what is going on. Well-built and attractively lettered, a typical sign would say:

JAMAICA WATER SUPPLY COMPANY

Sorry to Inconvenience You!

We are building a new water station to supply 4,000,000 gallons of water a day for the families in this area.

Cost of this project is $275,000.

News of each project is made available to the local press and a special effort is made to keep community leaders informed through direct contact with civic groups. In North New Hyde Park and North Valley Stream,

for example, the company is beginning construction of two residential-type well stations, different in appearance from the Floral Park building, but also designed to blend pleasantly with the homes in the area. In both cases, the company has planned luncheons for the presidents of civic and trade associations in the area, local government officials, and press representatives. The president, chief engineer, and other officers of the company will detail plans for the area and answer questions. Pictures and descriptions of the new installations will be available to the press.

Attractive Structures

Even in the more commercialized, less appearance-conscious sections of its territory, Jamaica Water's new facilities have been designed to improve, rather than detract from, the appearance of the neighborhood. In such areas, well houses are simply designed, stone-faced, concrete structures that are partly underground. Storage tanks are all "ground" type rather than standpipes. Even these inoffensive structures are being screened by attractive landscaping.

Public response to the company's expansion program has been gratifying to management. It is not unusual for the company to receive a letter from a civic association or property owner, complimenting it on a project and commenting, as one letter did, "that vacant lot used to be an eyesore—the way you've fixed it up since the new well was put in has certainly improved the appearance of the whole neighborhood."

In one instance, when a proposed well site had to be abandoned after test-drilling proved it to be unsuitable, disappointed residents of the area wanted to know why the "Sorry to Disturb You" sign had come down. They had been delighted at the prospect of a new well site in the vicinity.

More concrete evidence of the value of Jamaica Water's community relations effort is to be found in the public reaction to a recently imposed rate increase. There had been astonishingly little opposition or criticism. The general community attitude seems to be that the company is entitled to an increase in rates in view of the improvement in service and the kind of facilities it is providing. Community relations means many things to many people. To Jamaica Water Supply it means doing the best possible job for the community and, at the same time, making certain that the community fully understands and accepts what is being done. The results are worth it!

Dorr Company Engineering Fellowships

FELLOWSHIPS for graduate study in the fields of sanitary, metallurgical, and chemical engineering have been established by the Dorr Company of Stamford, Conn.

The fellowships, the first of which is offered to Rutgers University, will be administered by an endowed trust; the trustees are Drs. Norman A. Shepard, chairman, Joseph W. Barker, George O. Curme, Jr., J. V. N. Dorr, and Hamilton M. Chase. The appointment will be for 12 months and will carry a stipend of $1,800, plus tuition, and one month's vacation.

The fellowship commemorates the invention of the classifier by Dr. Dorr, whose work in hydrometallurgy formed the foundation of the Dorr Company, which is a producer of many kinds of sanitary- and chemical-engineering equipment.

Applications of Dr. Dorr's inventions have been extended into many fields, particularly sanitary and chemical engineering. Their basic concept simplified and increased the efficiency of handling solids suspended in liquids and recognized the advantages of positive mechanical action to give continuous operation with almost automatic adjustment under varying feed and load conditions.

For his developments, Dr. Dorr has been honored by leading scientific bodies and doctorates from four universities.

Currently, he is engaged in a one-man campaign for highway safety. His idea of a white line, marking the right-hand edge of highway paving, is already under successful test by one state-highway department and is expected to be in use this summer. This line assists drivers to stay on the pavement and to pass other cars safely when fog or the headlights of oncoming vehicles interfere with vision and create hazardous driving conditions.

Picture Booklet on Water Supply

A 16-PAGE, four-color picture booklet, *The Story of Water Supply,* has recently been published by the American Water Works Association to explain to school children in the sixth to ninth grades the many factors involved in procuring a safe, adequate, and dependable public water supply. Subtitled, "A Trip Behind Your Water Faucet," the booklet makes use of Willing Water, the cartoon character who is symbolic of water service, to tell the story in simple yet technically accurate terms.

As the booklet was designed to be distributed by local water works and other interested groups to junior high school science classes, plant visitors, and others, it has been made general in scope and will be appropriate for all communities, regardless of the characteristics of the local water supply. A companion teacher's manual is planned and will be prepared at a later date.

Contents

The history of man's efforts to obtain water receives much attention, and after tracing the development of communal wells and other water sources—including the Roman aqueduct systems—through antiquity, the booklet depicts the beginning of public water utilities in the American communities of Boston and Winston-Salem. Such early purification methods as boiling, settling, and filtration are attributed to civilizations as old as that of India in 2,000 B.C. The historical summary is concluded with an account of how modern filtration and chlorination practices finally made water truly safe to drink.

The remainder of the booklet is devoted to an explanation of modern water systems. A diagrammatic explanation of the mechanics of the hydrologic cycle introduces a discussion of the ways in which water is withdrawn from underground or surface sources, treated and purified, and then pumped into the distribution system to serve the various needs of the community. A final page acquaints the reader with the importance of leak prevention and the proper way to take a reading from the water meter.

Single copies of the booklet may be obtained from the American Water Works Association, 521 Fifth Avenue, New York 17, N. Y., upon advance payment of 15 cents. A schedule of quantity prices brings the unit price down to as little as 2 cents, and an imprint or message on the back cover may be added at slight additional charge.

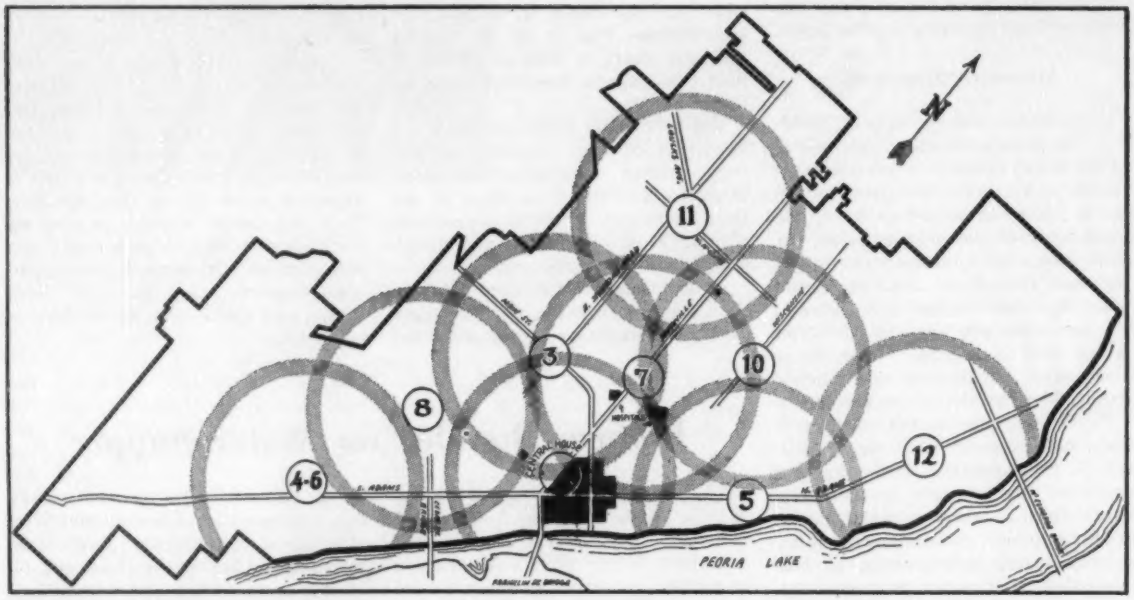
Relocating Peoria's Fire Stations

By JACOB D. DUMELLE
Assistant Engineer
Peoria, Ill.

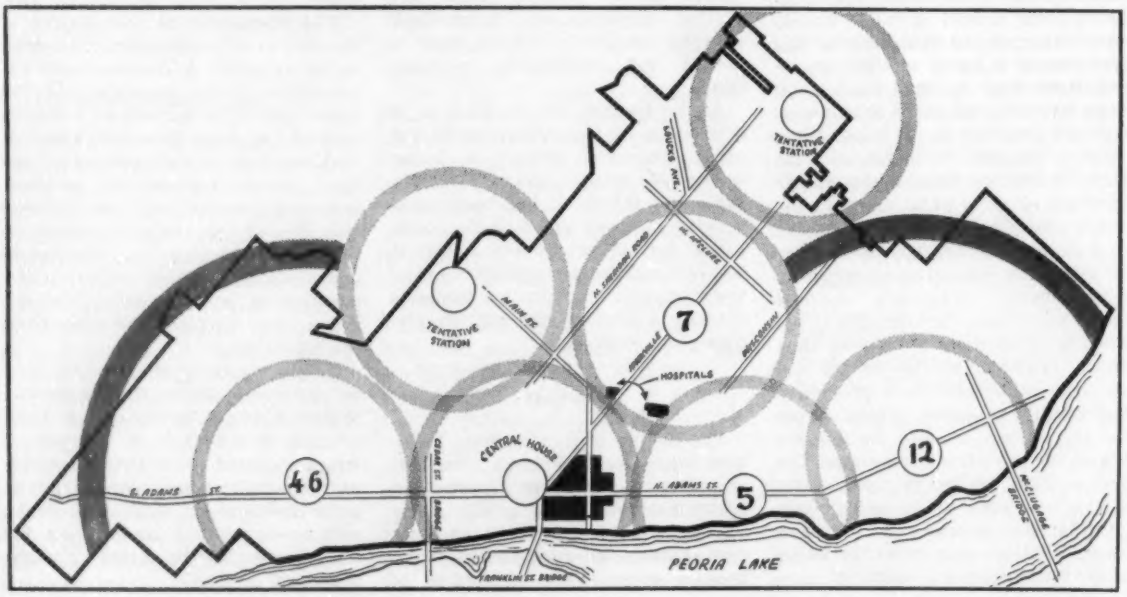
A PROPOSAL to obtain better fire protection with two fewer fire stations was presented to the Peoria City Council on December 1, 1953, by City Manager George E. Bean.

The recommendations made by Mr. Bean would reduce the number of fire stations from the present nine to seven; provide better coverage by fire equipment over the 13-square-mile city area; decrease maintenance costs with fewer buildings to maintain; and provide fire-protection coverage for the future growth of the city.

The National Board of Fire Underwriters recommends a maximum di-



The diagram above depicts existing positions of Peoria's nine fire stations, with overlapping circles, with radii of three-fourths of a mile, showing the duplication of fire-fighting efforts in many parts of the city. The sketch below shows the recommendation of City Manager George E. Bean, made after consulting with Fire Chief Sidney Ulrich—seven stations instead of the present nine. The three-fourths of a mile radius sufficient in industrial and commercial areas becomes one and one-half miles in residential sections (shown by the partially enclosed larger circles of darker color).



rect street-travel distance of ¾ mile to industrial or mercantile areas, for engine or hose equipment and 1½ miles to closely built residential areas. Spacing requirements of ladder companies are one mile and two miles maximum distance to industrial mercantile areas and residential areas, respectively.

Circles were drawn about the existing nine stations following the engine-company distribution requirements. The accompanying map illustrates the overlap which occurs. Many areas in Peoria are being unnecessarily covered by two or three stations, instead of one.

Analysis of these circles showed that only four of the five existing "valley" stations (4-6, 8, Central, 5 and 12) would be required to adequately cover the industrial riverbank area and central business section. It was recommended that the Central House be relocated south of the downtown business district to close the gap between it and the 4-6 House, and to avoid the business-area traffic. The requested additional south-side station was found to be unnecessary as was the 8-House.

The remaining four "bluff" fire houses (3, 7, 10, and 11) are located in residential areas or minor commercial zones. All are in unsuitable locations. Three new fire houses are planned to replace these four old stations. The new locations are planned to cover presently unincorporated fringe areas, which may eventually annex to the city.

Planning for New Multiple Company Stations

New stations will be constructed as multiple company stations, housing either active companies or active and reserve companies. Peoria, which has a population of 111,856, has the 11 engine or hose companies and five ladder companies required for a city its size, but at present, has no reserve companies. A map showing the locations of fires which have occurred during the past five years, is in preparation. From these data, the company distribution can be planned prior to actual construction of new fire stations.

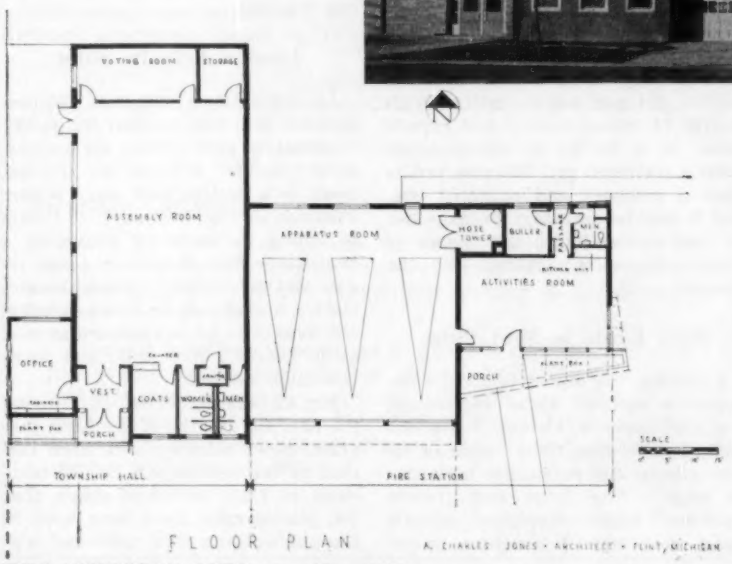
Peoria fire defenses are rated as Class 4. Construction of new stations with proper location will be a factor in reaching the Class 3 rating.

Since 1944, Providence, R. I., has saved $200,000 per year by eliminating 12 stations and 7 companies through a similar study. In 1935, Sacramento, Calif., reduced its number of fire stations from 14 to 9 by such a study. Maps and details on both these cities' experience in fire station location are given in the book, "Municipal Fire Administration," published by the International City Managers' Association (1313 E. 60th Street, Chicago 37, Ill.).

Proposed annexations also have an effect upon fire-station location. An excellent example of this are the annexations contemplated for Phoenix, Ariz., were studied by Gayle T. Martin, in his thesis: "An Analysis of Fire Department Organization and Administration in a Middle Sized City" (University of Denver, 1952). Mr. Martin found that two more stations would be needed if Phoenix annexed tracts totaling 19 square miles, in addition to three additional stations needed to adequately cover existing city area.

Several of these recommended station sites have been purchased by the City of Phoenix for future construction.

Combined Fire Station-Township Hall



FRANKENMUTH's new Fire Station—Township Hall was erected as a joint venture by the Village and Township of Frankenmuth, Mich. Total cost amounted to $65,000, of which the township paid $38,000 and the village $27,000.

The building was completed late in 1952. The township portion is being used by township groups, by the Township Board, and by both the village and township as a voting place. The Fire Station serves the volunteer fire department and also the Village Council.

The architect was A. Charles Jones of Flint, Mich., and the contractor, Baker Builders of Frankenmuth.

M unicipal
P ublic
R elations

The City Tells Its Story

Edited by PAN DODD WHEELER
Executive Director, Government Public Relations Association

PR Counseling Firm: One Answer For Cities in Need of MPR Help

LIVONIA, MICH., on the outskirts of Detroit, has doubled its population since 1950 and is one of the nation's fastest growing cities. Rapid growth brings problems . . . and problems mean that citizens must be energized to tackle them and be made understanding of the ones that cannot be solved immediately. And this, in turn, calls for a major communication effort. Livonia's citizen group, the Mayor's Advisory Committee, recognized these facts in their city last fall and told Mayor Jesse Ziegler, "we need a vigorous municipal public relations program."

Professional PR Firm Retained

Acting on the committee's recommendation, Mayor Ziegler and the City Council retained a Detroit public relations firm, Walter-Jacques Associates, and charged it with "instituting a program that will keep the citizens continuously informed of the city's progress."

ROCKVILLE CENTRE, N. Y., has just observed a 100th anniversary. Handling of the anniversary observance, like all other elements of the city's information and public relations activity, was done by Kennedy Associates, Long Island public relations firm.

The Rockville Centre village report, issued in connection with the centennial celebration, carried this a tachment:

"This copy of the annual report . . . is the most recent publication prepared and edited by Kennedy Associates. The firm is unique . . . in that it is staffed and geared to meet the public relations problems of *many* municipalities. . . . The very fact that a number of municipalities have used our service for the past 10 years is the best possible testimonial to the ability of our organization to produce results."

So, for these two medium-size communities—Livonia, population 37,000, Rockville Centre, 25,000—the need for expert, technical advice, direction, and actual handling of a municipal public relations program has been met with the employment of professional PR counselors.

When does a city government need "expert, technical advice" on how to relate itself to the public it serves? Writing under the title of "Public Relations Down to Earth," in the *Harvard Business Review*, J. A. R. Pimlott poses this same question with regard to private business and comes up with this answer: "Management will do well to employ public relations specialists" under these circumstances:

"1. Where the scale of informational and persuasive activities is large. This . . . may result from the nature of the organization. . . .

"2. Where it is necessary to use the major mass media (the press, radio, television, and films) in informing and persuading the publics. If for no other reason than the desirability of keeping continuity of contact, it is usually advisable to assign press and radio liaison to a single individual or group of individuals. This is commonly the first step on the road to a full-scale public relations department.

"3. Where the problems of information and persuasion require a high degree of technical skill and experience. It is harder to communicate with a scattered and illiterate public than a compact and educated one, and it may be necessary to make use of highly developed techniques of popularization in dealing with the former. . . ."

Need Exists in Most Cities

Checking the status of most communities against these conditions, the need appears existent. For a municipal government the "scale of informational and persuasive activities is large." The large and diverse "publics" which municipal officials must reach make it necessary to use the "major mass media" to inform and persuade publics. The city government's public is far from compact, which makes it harder to communicate with it and, as Mr. Pimlott writes, calls for "more refined skills extending beyond competence in publicity."

Municipal problems vary with each city. They are similar in this respect —few of them can be solved by city officials alone. All require some intelligent activity—as a result of being informed and, perhaps inspired—on the part of citizens. To provide information and inspiration, municipal management will do well to employ public relations specialists.

Occasionally a city is fortunate in finding someone who is able to do a professional public information job at a price the city is able and willing to pay. But, for the smaller community (cities with populations under 50,000) a qualified person and a salary to attract and keep him, is often nonexistent. In these instances a public relations firm, providing its staff people for the city's business, is one solution.

Livonia Tells Its Story

In Livonia, where the Walter-Jacques firm has handled the public information program for six months, early "results" indicate the arrangement is a satisfactory one. Walter Fishman of that firm says: "Livonia is telling its story by providing a continuous flow of news to press, radio, and television." News, feature stories, and photographs are distributed weekly to 13 newspapers as well as to Detroit's five radio and three television stations.

Mr. Fishman reported that, during the first six months of the MPR program, news releases have been carried by the newspapers on 165 occasions in 1,000 inches of space, that 100 photographs have been used in the publications, that radio and tele-

vision newscasters "frequently incorporate Livonia's news in their broadcasts," and that even the three Detroit metropolitan papers are "highly Livonia-conscious."

The public relations firm filmed the city's "big news story of 1953—dedication of a $300,000 city hall" and placed the film on the three Detroit TV stations serving Livonia viewers. "Livonia, U. S. A."—a report on the city government prepared by the city's public relations experts—"has exceeded even the firm's expectations," Mr. Fishman says. Club groups, Ford Motor Company officials, leaders in neighboring cities, and individual citizens have requested copies of the illustrated 64-page booklet. The report was accorded favorable newspaper mention, also, as a result of releases prepared by Livonia's PR consultants.

PR Service for Rockville Centre

William Kennedy, managing director of Kennedy Associates, gives what he calls "near maximum" service to Rockville Centre. However, he says the firm is "prepared to handle any matters affecting the public relations of a community, beginning with the planning and carrying out of a single project to the establishment of a comprehensive year-round public relations program." Projects handled by the firm for a number of cities, examples of what Mr. Kennedy calls "single projects," are: "preparation of an annual report . . . ; preparation of a message urging citizens to vote on a 'youth program'; planning and directing events to celebrate an historical community event; and arranging for special one-time radio or television programs."

Approaching the "maximum," Mr. Kennedy continues, "might be our service in surveying the activities and operation of a municipality with a view to establishing its public relations needs, setting up a PR program, and detailing methods of procedure (with or without direction of our firm).

"This would encompass the preparation and distribution of periodic reports of municipal activities for taxpayers; continuing assistance in the preparation of departmental reports; statements by municipal officials for release to the public through all the media; consultation with municipal officials and department heads on matters of policy as they affect the public or municipal employees."

PR Firm? Pros and Cons

"This would encompass the preparation and distribution of periodic republic relations firm of established competence. A PR firm has the professional "know-how" in determining the communications needs of the city, establishing specific goals to be accomplished, and in mapping out the total program.

A PR firm, through association with the mass media, has a background understanding of requirements of the media enabling it to utilize these to a maximum degree for the city. The "strictly business" relationship of a PR firm to its client city tends to keep the public information program out of in-city entanglements. Finally, the cost of a public relations firm's services, as compared to the establishment of a department and/or director, often is less.

Disadvantages in the handling of a public relations program for a city by a PR firm must also be recognized. The arrangement is suitable for a city of less-than-metropolitan size . . . the larger community needs its own city PR operation.

Since a city is but one of several clients, the consulting firm's staff may not be able to devote additional time or effort to the client city in event of special need. By the very nature of the arrangement, the public relations firm does not have the community integration of a city department or director. Employment of a PR firm can engender the feeling, on the part of city officials, that they have "transferred" their PR responsibility to someone else and are no longer answerable for it.

For many cities, engaging a public relations firm is one answer to their MPR problems. In Livonia, Mich., and Rockville Centre, N. Y., the city governments are now experiencing satisfactory relations with their "publics" due in part to the public relations and information activity planned and executed by firms of public relations consultants. Whether the experience of these two cities might be repeated in other cities of similar condition and size would depend, of course, on the city officials' support for a public relations program, the competence of the public relations counselors retained, and the continuity of the public relations effort which results.

Another Answer

FOR THE CITY, of whatever size, whose officials want a public relations program but cannot, for any number of good reasons, finance such an effort immediately, the public relations director of a large private business volunteers this:

> "I would be willing to serve my own city in capacity of advisor and planner on a public relations program if requested to do so and if assured that only in this way might the city fulfill its information responsibilities to the people. I feel certain that other professional public relations people would be willing to serve their cities in a similar capacity."

State and Local Taxes Take a Decreased Per Cent Of the National Income

THE TAX FOUNDATION (30 Rockefeller Plaza, New York, N. Y.) calls attention, in its *Tax Review* for February 1954, to the fact that since the end of World War II, state and local expenditures have risen on an average of $2,000,000,000 a year. If these are adjusted for the rise in prices, the average annual increase equalled about $1,300,000,000.

Notwithstanding this increase, this article by Roger A. Freeman points out, the state and local tax burden fell from 9.3% of the national income in 1942 to 6.9% in 1952.

"The widespread malpractice of assessing property below its value—average property tax assessments in the U. S. have been estimated at about 33% of current value—has cut the bonding power of many municipal governments to a fraction of their legal entitlement. That could be corrected by administrative improvements if emergent needs engendered sufficient pressure. Most cities have a sufficient bonding margin available at present."

An asphalt distributor and mixer team up to process street-surfacing material.

Three-Way-Stretch For Street Budgets

Pacific Grove, Calif., groups its asphalt street work in three general types

By GORDON R. FORREST
Director of Public Works
Pacific Grove, Calif.

The street program included the surfacing of many winding streets.

IF ONE CONSIDERS that streets girdle the city, then the need for a "three-way-stretch" street girdle becomes immediately apparent. Pacific Grove isn't a large city. We have a population of 10,000 and 47 miles of streets. However, as every city knows, large or small, the way a girdle fits its streets and its ability to provide three-way-stretch features are both very important.

Annual Expenditure

Pacific Grove has $55,000 to spend annually on its streets, which means that the stretch has to be carefully prepared indeed. The three ways that the budget has to be stretched follow a natural pattern:

1. Major streets carrying heavy traffic
2. Secondary streets that carry semi-arterial traffic
3. Lightly traveled residential streets

Major street expenses consume $30,000 of our annual budget. We award this work to contractors who construct about 2 miles of streets each year. The procedure we follow is to compact the subbase to a predetermined density, lay 5 inches of crushed rock, which is also rolled to an optimum density, and then cover it with a 2-inch wearing course of dense, graded plant mix.

City specifications for this plant mix require that it conform to the requirements for a dense, graded mixture described in Section 28 of the standard specifications of the California Department of Public Works, Division of Highways. However, the state requires a "Class D" seal coat that we do not require. The liquid asphalt binder used in SC-6 with a penetration index of 200 to 300. This work is financed by funds allotted to the city from gas-tax income.

Both the other types of surfacing are asphalt-stabilized, mixed-in-place types of construction which are performed by city forces. For the secondary streets, however, we use the rock for surfacing, whereas in the lightly traveled streets, we use less expensive decomposed granite which is native to this area.

Secondary Streets

On the secondary streets, we first grade to the proper cross section and elevation and roll the base until it becomes firm. Then we place 6 inches of crushed rock and blend emulsified asphalt into the top 2½ inches at the rate of 1.2 gallons per square

yard per inch of compacted depth. A Seaman self-propelled Trav-L-Plant, coupled to an asphalt distributor, mixes and makes the application in six or seven passes. Immediately after the final pass, the surface is rolled.

Application of Final Seal Coat

A final seal coat is sometimes applied to this surface. This application consists of applying 0.12 of a gallon of mixing-type asphalt emulsion per square yard before dilution. The emulsion is diluted at the rate of two parts of emulsion to one part of water. No cover material is used. We call this a "black seal."

The crushed rock is a quarried granite which is run through a crusher. It forms a dense, well-graded, stable mixture with an "R" value of 81. The mixture has a specific gravity of 2.35, a unit weight of 106 pounds per cubic foot when dry and loose, a maximum density of 141 pounds per cubic foot, and an oil ratio of 6.24, based on the use of SC-3, by weight. Its sieve analysis is as follows:

Sieve No.	*% Passing*
¾-inch	100
⅜-inch	84
4	71
8	58
16	45
30	34
50	25
100	16
200	10

On the lightly traveled streets, the native, decomposed granite is stabilized with asphalt emulsion in much the same manner as it is for secondary streets. If the existing roadbed is inadequate, new material may be added to establish a minimum base of 6 inches. The decomposed granite is then shaped to the required cross section with a Caterpillar Model 12 diesel-powered grader and compacted with a 5- to 8-ton Huber tandem roller. The top 2½ inches is then scarified and the asphalt binder material is mixed in.

In this process, we use either emulsified asphalt or liquid asphalt to stabilize the base. We apply it at the rate of 1 gallon per square yard per inch of compacted base. Our experience has been that the liquid asphalt does not produce a surface that gives a particularly long life, but it does offer the advantage of being readily remixed at little additional cost. The liquid asphalt is a cutback, similar to SC-2. We sometimes give this surfacing a "black seal" as is used for secondary streets.

Costs and Service Life

Current costs of this surfacing procedure, exclusive of base material, along with the anticipated average service life run approximately as indicated in the table below.

Costs do not include curbs and gutters. They are installed either voluntarily by property owners or under separate contracts in an assessing district. Three districts have been completed in the last three years, and a new district is planned for 1954. We assess the abutting property owners on a front-foot basis.

We require curbs and gutters on major and secondary streets before we construct the finer quality of pavement. We do not require them on residential streets prior to resurfacing. However, precedence is given to those streets where they have been installed.

The years of service must be considered only as approximate evaluations, since many factors make an estimate indeterminate. Base, subbase, drainage and ground water all are factors which play a major part in affecting the life of the pavement.

Costs and Service Life of Surfacing Procedure

Surfacing	*Per sq. yd.* (in cents)	*Service years*
plant mix	95	20
crushed rock with e.a.*	52	15
decomposed granite with e.a.	44	8
decomposed granite with l.a.†	35	4

*e.a., emulsified asphalt
†l.a., liquid asphalt

New Officers of Southern Chamber of Commerce Executives

AT THE closing session of its 46th annual convention, in Birmingham, Ala., March 16, the Southern Association of Chamber of Commerce Executives elected W. Marvin Hurley as president for the ensuing year. Other officers chosen were John M. Ward of Montgomery, first vice-president; M. L. Miles of Daytona Beach, second vice-president; and George Colclough of Burlington, N. C., secretary-treasurer.

For More Effective Federal-State-Local Relationships

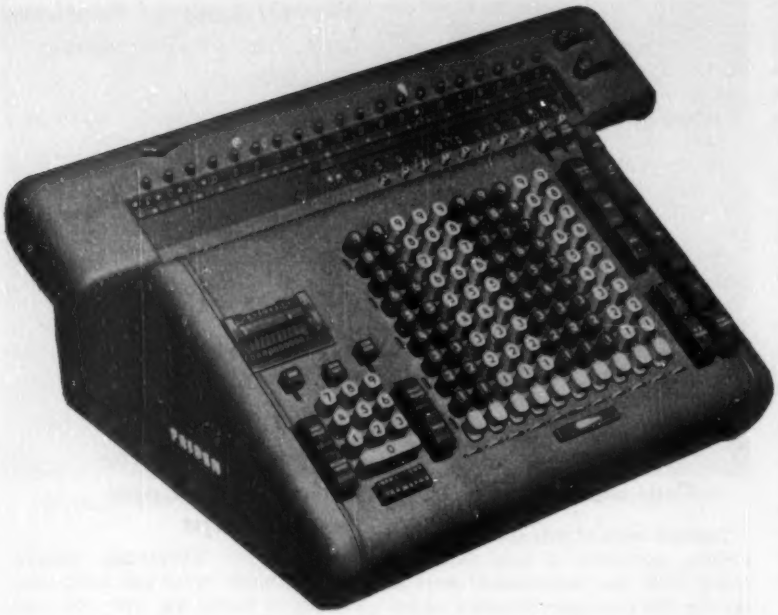
STATE AND FEDERAL governments should recognize that their success is bound up with the solution of problems of urban government, Mayor Frank P. Zeidler of Milwaukee told members of the American Society for Public Administration at the group's annual conference, held March 19-21 in Chicago.

But, he said, the fear was that President Eisenhower's Commission on Intergovernmental Relations would devote itself to state–federal relationships and "ignore the lesser governments."

"If that is what they intend to do, they will be sorry," the mayor said, adding: "Any government, to survive, must have a healthy base. Unless local governments are vigorous, unless the pressing problems of this nation's great metropolitan areas are solved, there can be neither healthy state governments nor a healthy national government."

Other speakers at the three-day conference included Frank C. Moore, president of the Government Affairs, Inc., and former lieutenant-governor of New York, who had high praise for the cooperation and aid state officials get from strong associations of municipal and county officials.

Among the panels held was: "Problems of Metropolitan Areas," at which Alderman Robert E. Merriam of Chicago's Fifth Ward was chairman, and speakers were Robert E. Baumberger, city manager of Superior, Wis.; Victor Jones, professor of government at Wesleyan University; Philip Hammer of Atlanta, Ga.; Samuel C. May, director of the Bureau of Public Administration of the University of California at Berkeley; and John L. Scott, village manager of Park Forest, Ill.



Why Calculators Are in Demand

OFFICE EQUIPMENT has become so important in municipal operations that it may almost be taken as an index of progressiveness. Fourteen cities of 10,000 to 30,000 people have currently reported owning 154 business machines and systems and needing 57 additional units. Typical of this equipment is the calculating machine, and 30 are owned by the 14 cities.

Alexandria, Va., for instance, bought a Friden calculating machine in 1938 when its population was 33,000 and now with 85,000 it owns 16 Fridens. Four are used by the Finance Department for computing taxes and auditing payments. The Assessor uses five machines; other departments using them are the Public Works, Building Inspector, Planning, and Commissioner of Revenue.

The widespread use of calculators by cities and counties is proved by the fact that a 24-page booklet* has been issued portraying municipal use of this make of calculators.

In the City of Philadelphia there are over 100 Friden calculators in 26 departments. Why seven different models are in use is explained by the multiplicity of operations required.

The work of the Bureau of Surveys and Design, for instance, includes much trigonometric calculation of land areas. A. W. Moser, Associate Engineer of Design, City Plan, says the machine with seven place natural functions of signs, cosines, and tangents makes calculation 70% easier than logarithm books and longhand.

The best (STW-10) was none too good for the Comptroller's Bureau of Audits, whose job is to audit the affairs of every officer, department, and board of the city and report to the Mayor and members of the City Council. Deputy Comptroller Robert L. Leonard said the Friden STW-10 reduced the time of valuable experienced manpower.

The calculators are also used by the Little Miami Valley Sewage Disposal Works, at Cincinnati, Ohio, to audit vouchers submitted daily by contractors on the sewage-treatment plant projects. These are handled as extensions and accumulations of the separate items instead of straight accumulation to a total. For example:

1588 ft. pipe railing
$51.13 per C ..... $ 81.46
10.60 cp. yds.
$58.36 per cu. yd. 581.52

These are totaled at the termination of the contractor's submission.

Duxbury, Mass.

Duxbury, founded in 1654 with John Alden and Miles Standish the first settlers, has 3,167 residents, a summer population of about 8,000, and a valuation of $9,568,000. During the last two years accuracy and fast figuring of taxes has been assured by the use of a calculating machine in the Assessing Department.

Hampton, Va. (population 6,000) used tables to figure taxes. After completing a page of 36 accounts, the valuations and taxes were totaled. Since July 1953, both the individual computations and the page additions have been made by machine more rapidly and with more accuracy than by using the tables. Commissioner of Revenue C. C. Frost says the city has a calculator that everybody can use.

The brochure also describes the use of calculating machines by a number of counties. In Kent County, Mich., the comptroller uses them to calculate tax rates, township tax apportionment, and distribution of taxes on assumed valuations. The treasurer figures sales-tax distribution to townships and figures intangible tax received from the state for distribution to township treasurers.

Calculators are used in all departments of Hennepin County, Minn., states County Auditor Robert F. Fitzsimmons. "With the tremendous volumes of tax accounts, special assessments, and levies to calculate, it is important that the office equipment we use be of the best," he said.

How calculating machines are continually improved and how models differ one from another is illustrated by the experience of Lloyd R. Freburg, Assessor of Phelps County, Nebr. After computing taxes for three years by one model, he bought a new automatic multiplying and dividing model which gave grand totals and half-cent adjustments automatically with much less work. A similar one is used by Rio Arriba Co., N. M.

*Write for a copy of Friden News for January 1954 from Friden Calculating Machine Co., Inc., San Leandro, Calif.

Another Industrial Assist To the Ohio River Clean-Up

INDUSTRY is pitching in to cooperate with the campaign to clean up the polluted Ohio River so that eventually it will once again justify the traditional, song-dedicated title of "Beautiful Ohio." One of the latest industries to join the campaign is the National Supply Company, whose Spang-Chalfant Plant at Ambridge, Pa., is located 20 miles down river from Pittsburgh.

Since the recent completion of a new waste-water separation plant, this mill now purifies its industrial waste water so that it is superior to the river water that receives it. The plant treats 5 mgd (million gallons daily), and has the facilities to treat double this quantity. The treatment was designed to comply with regulations established by the Ohio River Water Sanitation Commission, an interstate regulatory body.

Waste water from the Spang-Chalfant Plant contains large amounts of discharges from the manufacture of seamless tubing and other tubular products: mill scale, dirt, sand, all combined with oil and grease and some with black sludge. This waste water is almost odorless and contains comparatively little acid and no sanitary sewage. Much of the time, the effluent has a slightly alkaline pH.

To treat its waste, the industry uses a process developed by the American Petroleum Institute for oil refineries, amending it to supply pretreatment that removes solid particles and sludge, most of which is a combination of fine solids and grease.

Treatment Procedure

A simple bar screen that keeps comparatively large solids out of the system is the first step in separation. Next, the waste flows to a 24-foot-square Dorr Detritor that removes grit and other easily settled solids.

In order to prevent turbulence in the Detritor, the sewer carrying the waste makes a 90-degree turn into the Detritor, guided by 15 adjustable concrete deflectors in a 20-foot opening. A 3-foot-wide channel around this unit connects with the outflow channel.

Before overflow water reaches the separator basins, it passes through a Parshall flume that is equipped with Builders-Providence instruments that record the rate of flow. Three gates at the end of the flume allow the water to enter any of three primary separators. A fourth opening, now bricked up, provides for possible future installation of another primary separator.

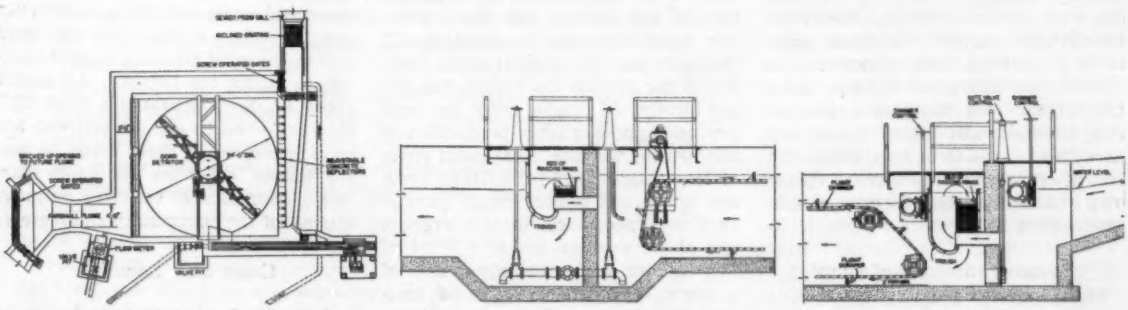
The water flows down through 14-foot trays containing beds of 2-inch-diameter ceramic Raschig rings, and into the main settling basins. The Raschig rings help to separate and break up contaminating material that does not readily separate by gravity. Their use is somewhat unusual since the Petroleum Institute no longer recommends them.

Surface oil that accumulates in the flumes at the entrances to the primary separators is removed by intermittent operation of a skimming drain that discharges into a square concrete pit, or "scum decanter." Further settling of solids and flotation of oil occurs in the primary settling tank, which is 14 feet wide, 92 feet long, and has a water depth of 5¾ feet.

Chain-driven Walker Process scrapers push settled material into sludge pockets. The scrapers become skimmers as the chains lift them to the surface and return them to the head of the tank. Surface oil accumulates beside the distribution box where it is drained off through slotted drain pipes.

From the primary separators, the water flows into adjoining ends of secondary separator basins by way of distribution boxes which contain more shallow beds of Raschig rings than those at the intake ends of the primary separators. The secondary separators are the same widths as the primary units but are 132 feet long and have no scrapers or skimmers other than rotatable drain pipes at the far end, like those in the primary separators. Water flows from the separator through a trench to the river.

Two 4-inch Marlow sludge pumps of the duplex type transfer the sludge from the settling tanks to any of eight lagoons. The pumps have a normal capacity of 6,300 gallons per hour.



Mill waste water, made up of discharges from the manufacture of seamless tubing and other tubular products, flows into a Dorr Detritor (left) where the heaviest particles settle. The Parshall flume carries the Detritor effluent into one of three 14-foot-wide primary settling basins (center) by way of nine 10-inch-diameter pipes and 14-foot troughs, or distribution boxes, and into film-rupture trays containing Raschig rings. The junction point of primary and settling basins (right) shows sludge pockets, suction-line terminals, flight scraper drive, and secondary film-rupture tray.

Beware

the false prophets

By SCOTT BAGBY
Scott Bagby and Robert Catlin
City Planning Consultants
Montclair, N. J.

FOR EVERY QUESTION that the city official has answered "YES" in the accompanying list, he should read this article over another time.

Every responsible elected official in the United States owes it to his community to examine carefully the reasons why the too-simple and seemingly too-obvious answers to these questions are *not* the right answers.

Everyone interested in cities has a pretty fair idea that, as a general rule, business and industry will pay enough in taxes to at least equal the cost of city services rendered to their own establishments. The next simple proposition follows:

> Therefore, the cost of running an American community today is the cost of serving the residential units in which the population lives.

This will hold true regardless of the type of community. For example, suburban Montclair, N. J., has a high proportion of above-average homes and a small but prosperous commercial center which enjoys one of the highest dollar purchasing volumes per store in the world. In 1946, before any real inflation, the average home in Montclair was paying $400 for town and school services which cost $300. This meant that any excess taxes from a profitable business district were not helping to pay the bills of the *average* home. Rather, such taxes were joined with the tax bills of the average and above average neighborhoods to subsidize 17 *below average* residential areas, from which the average tax return was $80 per family. Of course, these are only average figures, a large proportion of the health, welfare, and social costs of Montclair were in the below average areas, and a very small proportion was necessary in the average and above average areas.

A similar study was also made of a completely different type of community, the Grand Rapids, Mich., metropolitan area. Grand Rapids has a strong diversified industrial base, a prosperous downtown business district which draws trade from a large surrounding area, and 12 valuable suburban business areas. Grand Rapids has traditionally preferred a lower standard of services, and meets a much larger portion of its needs on an individual basis rather than a community basis. The cost of this standard of city and school services in 1949 was $165 for each family in the city, but the average family paid only $135 of this since the business and industrial areas paid $30 of the total cost. Most of that $30 came from the central business area, and industry just about averaged out meeting its service costs.

Examining the residential units, we again find it true that every above-average home is paying more than $165, again showing that all of the excess from its profitable business area has had to be used up in the below-average residential areas in the way of subsidies. In the lowest quarter of residential values, the average family was paying $52 for its $165 worth of services; the next highest range was paying $98 instead of $165, the first quarter above average was paying $176 instead of the $135 it would have to pay if it received its share of the $30 from business and industry; and the highest quarter of values was averaging $257.

The serious problem is not that there exist below-average as well as above-average living units, but that there is a spreading cancer of residential depreciation developing around the lowest-value areas in most of our American cities. More damage is being done to American cities by this spreading blight than was done to all European cities in all of World War II by block-buster bombs. The apt comparison has been made that the disintegration is just as real, even though it is considerably slower.

It is obvious that if present lower-value areas spread their effect and reduce the value in adjacent good blocks, there will be more and more units reduced to a level requiring more and more subsidies, destroying existing values so that there are fewer and fewer good homes and good businesses to pay the subsidy. All sound types of development are then ultimately forced to choose between annual increases in their taxes to pay for bigger subsidies for more curtailed standards of services or moving out of the community completely.

Costs and Location

A second basic economic factor in city development is the direct relation between the cost of serving different kinds of development and their location. Business and indus-

try, spread indiscriminately throughout a community, will naturally require a much higher service cost than in a community where business and industry are centralized in one or two easily served locations. This is just common sense, for in the spreadout case many more miles of heavy utilities, heavy streets, heavy maintenance, and heavy police and fire protection will have to be furnished, and many more residential areas will be affected adversely by the industrial locations and business and industrial traffic.

Since the automobile has exploded American cities from a compact pattern, we are beginning to learn the lesson of economy of location the hard way.

In the Grand Rapids area plat shown, the black represents city-type small-lot development, scattered in many locations. It is obvious from this map that there will always be 10 or 20 times as much open land available adjacent to any central city as can be used up by even the most optimistic estimates of population growth in the future.

As new development occurs and surrounding farm fields are taken up with new home development, the septic-tank sewage systems and individual well-water supplies break down and serious health problems develop. As a cluster of 10 homes becomes a cluster of 300 homes, adequate schools within walking distance of the homes become a necessity. Unfortunately, 5,000 or 6,000 people in such areas, who are spread out over 3 square miles, require 50 miles of streets and utilities, police and fire protection, and 3 elementary schools. In other words, they require almost three times as much in the way of services as they would have if living in a more compact development of single-family houses typical of the preautomobile era.

Borderline Areas

The unbalanced economy of scattered city-type development in the fringe areas beyond the central city is an even more serious economic problem than the problem of interior central-city residential deterioration. The subsidies to uncontrolled fringe-area growth are even greater than the subsidies to spreading blight, and the community which does not use every tool at its disposal to correct these two problems will be forcing its taxes higher and higher, even though it will have to, at the same time, reduce its standard of services.

The Urban Service Policy adopted by all seven units of government in the Grand Rapids metropolitan area is a relatively simple and logical step benefiting both the city and the surrounding governmental units. Enough land is set aside for all of the residential and industrial growth that can occur as Grand Rapids grows from its present population of 250,000 up to 300,000. The policy is basically simple. By zoning, by extension of utilities, by subdivision control and by the provision of all urban services, it simply puts every type of development on notice that there will be schools and services for an urban population within these areas, and there will not be such expensive services beyond these boundaries. It says to the man who wants to locate on a small lot, "you should locate within the area in which small lot services will be provided." It says to the family that wishes to live on an acre or more of ground, "you may live anywhere you choose since you will not force us into health or service or school problems."

The basic economy of this step is again quite obvious. Until such time as the full 300,000 population target is reached, every person in the service area can be served with 800 miles of streets and utilities; services and protections, and 50 elementary schools. A continuation of present unsound growth into wider and wider scatterings of small-lot development could easily require the same 300,000 inhabitants to pay for 2,500 miles of utilities and streets; services and protections and 80 or 90 schools.

With a surplus of land available by automobile for present living purposes, there is always present a safety

---

Confusion about City Development Factors is causing more serious mistakes in the Development of American Cities than any other one factor. Answer these statements "Yes" or "No."

1. An industrial community is more economical than a residential community. ..... Yes No
2. We must bring in industry to help build up our tax base..... Yes No
3. We should attract new industry by giving it low tax assessments or providing tax-exempt buildings for it. ..... Yes No
4. We must permit apartments because apartments pay more taxes, require fewer services, and send fewer children to school. .... Yes No
5. We must discourage further home development because every home has two children and the cost of educating a child is $300 a year and our schools are already overloaded..... Yes No
6. As houses get older their value declines, and it is only natural for good home neighborhoods to change in quality from good, to medium, to poor, over a period of years. ..... Yes No
7. As a neighborhood gets older and its original inhabitants move out, the homes must be converted to multiple-use to maintain their values ..... Yes No
8. The day of the large home is ended. People want small homes or apartment units. ..... Yes No
9. The better families, moving out to new suburbs where taxes are low, create tax problems for the city from which they moved. Yes No
10. We cannot afford to provide parking for our established business areas. ..... Yes No
11. No one will build $20,000 homes on busy highways—therefore, highways should logically be zoned for business, industry or apartments. ..... Yes No
12. We have a large percentage of our area devoted to tax-exempt public or semi-public uses which causes us grave financial problems. ..... Yes No
13. We cannot afford the luxuries of attractive civic centers or adequate parks and schools. ..... Yes No
14. We cannot afford the new expressway we need because it will remove property from the tax rolls. ..... Yes No
15. We cannot raise any more local taxes because taxes are too high already. ..... Yes No

valve: if present unforeseen circumstances should cause a greater population increase than now seems reasonable, it will be a very simple matter to open up economical new service areas when the time comes. Certainly we do not want to saddle a potential population of 300,000 with the full cost of services that would not be economical until we reached a population total of 500,000.

Industry Can Be Tax Asset and Job Base

With these factors in mind, let's go back to the "Yes" or "No" statements. It is now possible to define why purely residential suburbs like Glen Rock, Glen Ridge, and Montclair, N. J., for example, are more economical places in which to live, and receive more for their tax dollars than heavily industrial Newark, Belleville, and Kenilworth. Not only do the industrial communities have higher tax rates and higher assessments and a lower standard of services than the purely residential suburbs mentioned, but the industrial communities cannot compare with the residential communities as places in which to live and raise a family.

Let's investigate some of the reasons for this. The residential communities mentioned do not have the problem of subsidy through community services to a sprawling fringe area. This same is true of the industrial communities chosen. But the industrial communities have, by their very nature, created problem-housing areas and have deteriorated surrounding residential values to such an extent that any tax excess from industry has had to be poured right back into a greater necessary subsidy for poor housing. The threat of such poor housing, in turn, has discouraged the development of better housing.

While these six communities are not self-contained metropolitan areas, the same principles apply in a completely separate metropolitan area like Grand Rapids. If we will start thinking of the people of a community as the most important single factor and industry primarily important as a job base rather than a tax base, we begin to reach some quite logical answers.

For this reason, the second of the opening statements must be answered with a full realization that good new industry in the right location in the right type of community can be both a job base and a tax asset. Only by careful planning can these factors be determined. The wrong type of industry in the wrong location — particularly if it is improperly assessed — can more easily raise community taxes than lower them. Growth in population alone has very few benefits to a community unless that growth is of a desirable type.

How about the question of apartments versus single-family houses? Do apartments pay more taxes and require fewer services? Again the important factors in apartment development are location and proper assessment. As apartment houses grow older, they can compete with newer apartment developments only by lowering their standards and their rents. As this occurs, the history of every type of apartment shows that while new apartment owners are very choosy about taking families with children, some of the worst school problems occur in older apartment areas because of overcrowding. Careful studies of this subject show that over a 60-year period, the average home must pay in taxes for the cost of sending a child to school during 40 of these years. The average apartment unit will have to pay the cost of sending 20 children to school.

Importance of Proper Assessing

Proper assessing is absolutely essential if a community chooses apartment developments even in the most carefully selected locations. But Tax Appeals Boards must consider how apartments in the entire area are assessed. Apartments scattered through high-grade residential areas will cause more loss in the residential areas than can possibly be gained from the new taxes added.

There is a basic fallacy in the argument that each new home adds two children to the school population, and that, therefore, a community cannot afford new homes and new children. This just isn't so. The statement can be checked immediately by taking the total number of school pupils and dividing this by the total number of dwelling units in a community. Normally, this would come out about one school pupil for each two families in a community. Because of the peak births from 1943 through 1952, this may temporarily go up to a peak of one pupil for each family in the early 1960 period, but this will decrease rapidly as births decline sharply from 1953 through 1958, and the children born during the depression become the marriage-formation age group. Public education is possible only because of the workings of the law of averages and must be financed by proper tax assessing on all types of development. Business and industry are not properly assessed if they do not pay their proper share of our school costs.

For years we have accepted as an axiom of city development that as houses grow older they become less desirable and must necessarily reduce in desirability and value. This direct relationship between age and value is perpetuated by our tax-assessing systems. The fact that so few home neighborhoods have received any real zoning, or traffic protection has tended to make it true that age and depreciation are synonymous, but a moment's thought will show that there are many fine neighborhoods and fine homes well over 50 years old, while many 20- and 30-year neighborhoods are already run-down, depreciated areas. In studying this problem, it is obvious that a combination of age and lack of protection will reduce home values, but that age has very little to do with value if a home neighborhood is protected. The basic reasons have been found to be:

- Intermixture of residence with apartment, business, or industrial use
- Lack of protection from through traffic
- Lack of adequate building codes or building-code enforcement
- Absence of school and park facilities
- Inadequate city services
- Original poor subdivision of the land.

If we take these one by one, we find that it is now possible to guide new development and insure protected home neighborhoods through modern zoning and modern subdivision regulation and design. It is possible to provide new neighborhoods with adequate parks and schools and services. It is possible to insure strict enforcement of building codes.

Outlook for Older Neighborhoods

Does this mean that our older neighborhoods, where some mistakes have already occurred, are doomed to eventual decay? The illustration of the Dickinson area in Grand Rapids should provide a positive answer to this question. This neighborhood, generally 20 to 30 years old, is a modest, average middle-Western neighborhood. Its owners could see that if present trends continued they would in a matter of a few years sell their homes and move out to newer and better-protected neighborhoods.

An expanding industrial area to the north provided a standing threat to stability of their values, as well as a steady stream of trucks and industrial traffic past the school build-

ing. Other streets were being used as convenient bypasses for motorists who did not live or work in the area. A few zoning violations had crept in. This neighborhood, spurred into action by self-interest in maintaining its desirability, first worked out with the City Planning Commission the ways by which each of these individual problems could be solved, then petitioned the City Commission to make the changes shown on the plat and asked that the cost of these changes be assessed against the entire neighborhood. The highest resulting assessment in the area was $100 and the lowest was $20.

A study by the local Institute of Appraisers indicated that as soon as the initiating action was taken, there was an immediate increase in the value of all homes in the area much greater than the assessment. The important thing, however, was that this entire neighborhood stabilized its values which would have continued to decline if nothing had been done. In this case, the city and the industrial area both participated voluntarily in this cooperative venture to permit a good industrial area to expand while still insuring the protection of a home neighborhood which will be much more livable and much more valuable.

Conversions of Single Dwellings

The conversion of single-family homes to multiple use, while a temporary shot in the arm for one or two of the first properties converted, will create many more problems than it will solve unless it is exactly the right location. Maintaining a neighborhood as outlined above is a much sounder process.

The big old house which is permitted to become a multiple use changes the character of the entire neighborhood, and causes the remaining owners to move away, reducing both real and taxable values. Today, there is a demand for 3- and 4-bedroom homes in protected established neighborhoods, and it is doubly damaging to encourage unlimited conversions to multiple use.

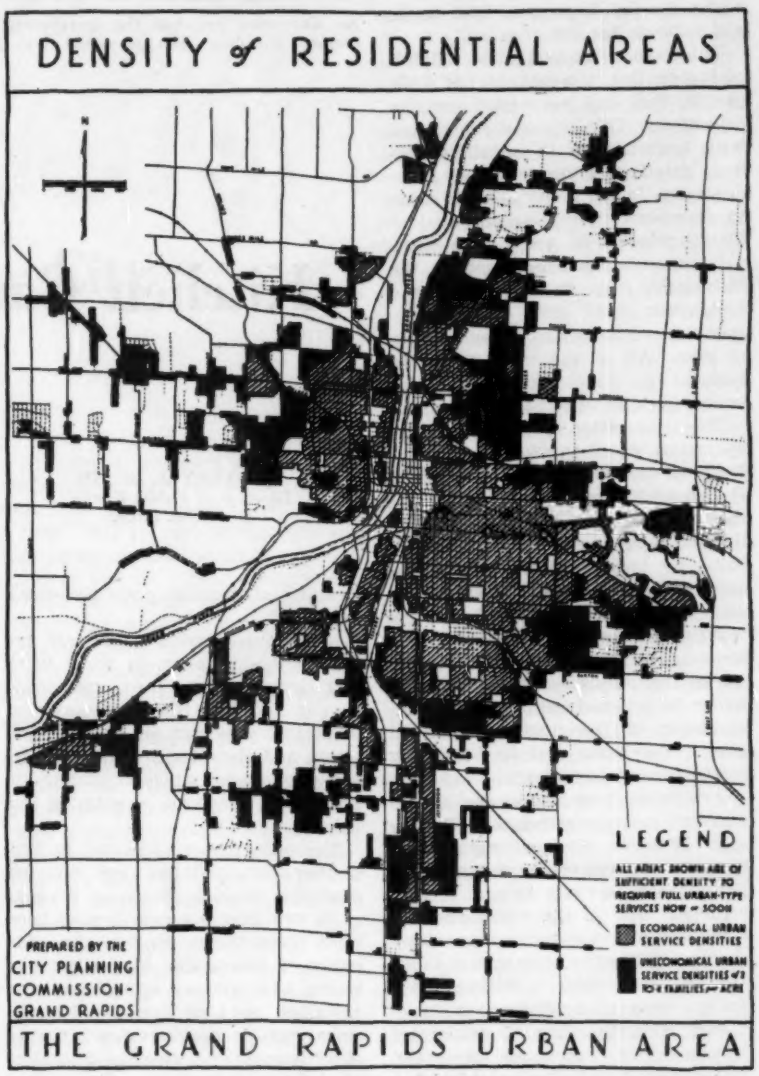
The only sound general answer to all of the remaining statements is "NO."

Probably the most dangerous and most damaging is the final question on local taxes. There is a long transition from the time every owner paid for his own services to the time when each local service or protection was provided by community taxation as a saving over the cost of meeting that need individually. No property would be worth anywhere near its present value without the community services it receives.

Unfortunately, now that we have developed as an urbanized nation and most city areas are served and protected, there is a too-general belief that we cannot afford local taxes. Local taxes have been so reduced in many cases that the needs have had to be met from the state and federal level through indirect but more costly taxes. When enough people realize that no government can "give" anything, but must first collect from people before it can provide anything, there will be a realization that local taxes to meet local needs are the biggest bargain in the country today.

The few dollars that might be saved by cutting local budgets for sound planning, and for needed capital investments in parks and schools and all other needs, are like the few dollars any individual might save in neglecting his teeth for a long period of years. The end result will be the same. It will be more painful and more costly, and there is a danger of serious illness later.

Officials who are willing to take the responsibility of knowing basic development factors and acting on them need support and encouragement. There must be a wider understanding of these factors by all the people of every community. You can help yourself and your community by making this important subject the basis of careful consideration and discussion in your own neighborhood and in your local clubs and schools and churches.


DENSITY of RESIDENTIAL AREAS
LEGEND
ECONOMICAL URBAN SERVICE DENSITIES
PREPARED BY THE CITY PLANNING COMMISSION-GRAND RAPIDS
THE GRAND RAPIDS URBAN AREA

Studies such as this "Density of Residential Areas," are important in determining a city's policy with regard to the installation of urban type services and utilities.

Kitchen Garbage Grinders

By HARRY A. HOXIE
Director of Public Works
Dearborn, Mich.

FOR SEVERAL YEARS, it has been my personal belief that the most satisfactory and sanitary way to dispose of household refuse is to do so at the source. Just as it took considerable time to educate us to the desirability of installing our modern home plumbing, it will require time, education, and finally legal action to eliminate the garbage pail.

Committee Appointed

The first mention to appear in Dearborn's records relating to the universal use of home garbage-disposal units for the city's 95,000 citizens was in 1945. Interest in the subject grew until 1949 when the Dearborn Federation of Civic Associations, which is comprised of 14 neighborhood property-owner groups, appointed a committee to recommend a plan for the disposal of food waste and rubbish for the city.

This committee contacted officials of Jasper, Ind., a community of 6,800 people, that had suspended garbage collections. This city had cooperated with householders in installing garbage grinders in every home. Paradoxically, Jasper's city officials came to Dearborn when they decided to install grinders on a city-wide basis.

Dearborn's Ford Foundation, the fashionable home development in the Greenfield Road area, was the inspiration of Jasper's garbage-disposal plan. All of the more than 500 homes in Ford Foundation are equipped with waste-disposal units.

The committee investigated the operation of the several different kinds of units then on the market. It also studied carefully the proposal that the city purchase units just as they do water meters and systematically, by areas, install them in the older homes to accomplish an orderly elimination of the use of garbage trucks. However, in order to gain some immediate headway, the committee recommended that an ordinance be enacted calling for the installation of food-disposal units in every new home and food-handling establishment in the city.

Architects here realize the advantages of garbage grinders in the design of new modern restaurants. Builders of these restaurants are realizing major savings in cost of construction due to the elimination of storage rooms for garbage cans, unsanitary and expensive grease interceptors, and other facilities which are not required by disposal units.

Reduction in costs of restaurant operation are even more important. The expense and disagreeable labor required by handling, storage, and cleaning of garbage pails are eliminated.

An ordinance requires the installation of kitchen garbage grinders in all new homes. Builders, who protested law, now feature the units as selling points.

Kitchen employees appreciate the greater convenience in their work and carry the word from one restaurant to another. Health Department inspectors give high ratings for sanitation and cleanliness to the new installations and suggest similar installations to owners of existing restaurants.

The ordinance was passed in September 1951 and has met with remarkable success. Since an average of 85 new homes a month have been built since the passing of the ordinance, it means that in the last two years, 2,000 grinder units have been installed. Add to that the installations made in previous years, and in older homes, and we have a total of over 5,000 units in use throughout the city.

Assuming the cost of picking up garbage is 30 cents per unit per week, we are saving the taxpayers $1,500 per week, or about $75,000 per year. Comparisons show that this pick-up cost is low, but we have taken into account the added expense of operating the sewage-disposal plant to take care of the added load.

Available estimates show an increase of 44% in the suspended solids and an increase of 100% in the grease content in residential communities having garbage grinders. However, before these solids reach the sewage-treatment plant, they are diluted with the sewage of commercial and industrial establishments, so that we find no trouble in handling the additional load.

Builders Recognize Benefits

When the ordinance first went into effect, there were a number of builders who had objections to forcing people to install the garbage grinders, but after the units were installed

Dearborn's Ford Foundation residential subdivision, first in the area to be equipped with grinders, served as inspiration for Jasper's garbage-disposal plan.

Mean A Cleaner City

and people began to appreciate the convenience, the builders found that it was to their advantage to have a unit installed. The homeowners who now have units are spreading the word about the desirability of grinders so that at least 15 new units a week are being installed in the older homes.

An Occasional Complaint

Occasionally, we have a complaint about a sewer becoming blocked, but investigation usually finds that the people do not run enough water through the unit. Or we find that the laundry tub is located too close to the house trap, and the unused soap detergent collects the particles of grease in the house trap. It is a simple matter to clean the house trap and open the line.

In December 1952, the city council passed an ordinance permitting the plumber to eliminate the house trap and trap the conductor separately. This has really solved the problem.

In order to get more grinders into older homes, it is my belief that an ordinance should be enacted setting a time limit in various districts for the universal installation of garbage-disposal units. The householder should be allowed the privilege of contracting with whomever he desires to make the installation, and provision should be made in the ordinance for the city to furnish and install a unit and allow the householder to pay for it on a quarterly basis on his water bill, the payments to be spread over a period of five to ten years. This would eliminate the city's getting into the maintenance problem and require every householder to take care of the service and repairs needed because of use and misuse of these units.

The garbage-disposal units differ from the water meters in that the water meter cannot, except in a very small percentage of cases, be damaged by any actions of the householder in their use. However, this would not be true with a grinder or disposal unit. The householder would not take the proper precautions and care if the city were to maintain such units on an annual charge basis, and if the householder were to be charged for the cost of repairs it would increase the city's operation costs, due to billing and delinquent payments for such charges.

However, it is recognized that if actual food wastes only were disposed of in the home unit, it would still be necessary to have collections to care for the rubbish, combustible and noncombustible, even though 100% of the homeowners of a particular district were to have garbage grinders.

Other Methods

Obviously, grinders cannot dispose of all food wastes, and we find the incinerator manufacturers advocating the use of incinerators in place of grinders. Grinders, however, are made in one general style, while incinerators fall into about three different categories: flue-fed, auxiliary, and the dehydrator types. The first two types burn food wastes and rubbish within a short time after the waste is placed in the unit. The dehydrator type, as its name implies, dries out the food waste and continues to burn many hours later.

The big objection, so far, to household incinerators comes from the neighborhood objections to odors. Manufacturers, however, may be able to eliminate this nuisance. The dehydrator type appears to be practically odorless; the auxiliary-fuel type also works well but is expensive to operate. It has not only fuel to burn the waste, but an additional fuel burner above the waste to burn the smoke and odors.

We estimate there are about 2,000 small incinerators, of all types, in use in Dearborn. The city council recently enacted another ordinance requiring all new commercial and industrial establishments to have an incinerator. The law also applies to the older buildings having over 2 bushels of rubbish per day to install an incinerator within a period of one year. This should mean an additional indirect saving to the city of the sum of $70,000 for rubbish and garbage service within the next year and thereafter.

We are happy to state that Dearborn, Mich., won national awards in 1951 and 1952 in the annual "Cleanest Town" contest. To a large extent, we attribute this recognition to our home and restaurant garbage-disposers and small incinerators.

Elm City's stump removal machine, with large cutter attached, is shown being mounted. At the left, is a close-up of the drill at work on a typical large stump.

Tree Stump Removal

How New Haven combats Dutch Elm disease

By HERBERT J. CRAN, Jr.
Superintendent of Trees
New Haven Park Commission
New Haven, Conn.

DUTCH ELM DISEASE was first noticed in New Haven in 1936. As each newly infected tree was observed, it was promptly cut to stump and burned to prevent the spread of this fungus.

During the war years, however, help was scarce and no street-tree care could be provided. Thus in January 1950, when I joined the New Haven Park Department, we were faced with a tremendous task of removing hundreds of diseased elms. To speed up the clean-up program, many of these were removed by outside contractors.

Since that time we have carried on a complete sanitation and DDT spray program to control the insect carriers of the disease, and there has been a direct correlation between the concerted efforts in the prevention of breeding and feeding and the decrease in the number of elms lost to the disease.

Since January 1945 there have been 3,539 American elms that have succumbed to the disease. However, this is only a portion of our elm population; we also have English, Scotch, Chinese, Siberian, and Moline elms on our streets. But the removal of the graceful, stately Dutch

elms is a great loss—a loss particularly experienced by the citizens who can visualize the broad avenues as they looked in the early twenties.

Now we are entering a new era. Although some American elms will be planted along with the Moraine locust on our broad avenues, this stately elm will no longer be set out on the narrow streets. Carefully selected smaller trees have been used as replacements, chosen because of their beauty, safety, and economy.

We have set out such trees as Asiatic maples, flowering hawthorns, the Amur cork tree, the little-leaf linden, the globe-headed elm, the *Zelkova serrata* and the flowering dogwood. The columnar Norway maple and the staminate or nonfruiting Ginkgo have a narrow upright form and have been planted along narrow streets where there is a small building set-back.

What to Do with the Stump?

Even though we found suitable replacements, we were still confronted with the problem of stump removal. The majority of the elms removed were 50 to 100 years old, and so their stumps averaged 40 to 60 inches in diameter at the base. No amount of replanting could hide these ugly remains. Removal by hand was out of the question because of time and manpower problems.

Various methods of removal were studied and observed. A pneumatic drill with chisel attachment, such as is used on construction, was tried with the aid of a compressor. This would only chip off the outer portion of a decayed stump but not the hard core. It was impossible to cut a freshly cut stump with it, and holding the drill in various angle positions was fatiguing for the operator.

A demonstration was set up for stump removal by burning, using the same principle as the blacksmith's forced coke fire. The core of a 3-foot stump was drilled out and capped with a steel cylinder to which a flexible hose was attached from a blower. Holes were drilled around the base of the stump in such a manner that they joined the original hole made down through the stump's core. Soft coal was placed in the steel cylinder, burning charcoal was placed on top, and the flexible hose clamped in place. The blower, operated by a truck's power take-off, forced air through the hot coals and burned the stump. Unfortunately, this method was unsuccessful. What the blower did was merely to burn out the core of the stump and to enlarge the holes around the base. The large buttress roots remained as did the immense shell of the charred stump, which still required hand labor to remove.

Electric drills used by fire departments to cut through sub-flooring to admit a fire hose in short order, gave us the idea that some such drill could be adapted to stump removal. We took our problem to John J. O'Brien, the inventor of these fire drills. The result was the O'Brien Stump Cutter that we use today.

Stump Cutter

The cutter, composed of a frame with suitable bearings and a spindle, is mounted to the rear of a D-2 Caterpillar tractor and operates through a rear power take-off. A pilot drill is attached to the spindle and cutters up to 15 inches in diameter follow the drill.

Stumps are first cut flush to the ground with a two-man gasoline chain saw, and then the stumps are drilled out to a depth of 12 to 14 inches with the 2½-inch pilot drill, followed by an 8½-inch and a 15-inch cutter. A series of such holes are made depending upon the size of the stump. We feel that cutting the stump to this depth removes the main bowl of the stump and avoids appreciable disintegration and cave-in later on.

The average number of stumps removed has been three a day. This involves stumps averaging 40 inches at the base and scattered throughout the city. When we run into a heavy concentration of stumps, where it is not necessary to load the machine onto our tip trailer, we have averaged from three to five stumps a day. The stump cutter can cut a stump in the tree belt with no sidewalk, curb, or road damage and with no interference with pedestrian or vehicular traffic.

There have been no major repairs to the machine, but we have found it necessary to purchase another set of cutters, so that there can be a continual operation while one set is being hard-surfaced.

The cost of stump removal by machine has been $34 per 40-inch stump if we drill out two each day, and $26 per 40-inch stump if we drill out three a day. The complete removal of a 40- to 60-inch stump by hand would cost us over $70, taking three days to complete the job.*

Since we acquired our O'Brien Stump Cutter on December 28, 1951, we have removed about 1,500 stumps from our city tree belts, though we have not had the machine in continuous operation.

As we possess only one Caterpillar tractor with blade, we make it serve a number of purposes, such as for clearing land for our expanding nursery, piling top soil, and piling wood and stumps at the dump for burning There are probably other heavy power units to which the stump cutter could be attached. For us, the tractor was the answer, and we feel we have a machine that is vital in our clean-up program.

---

* With amortization set at 1,500 stumps, it costs $9 per stump for the machine alone, exclusive of the labor involved; the machine and the labor totaling $34 and $25, respectively. We employ two machine operators, one truck driver, and one laborer.

San Diego Needs Mission Bay Park Director

SAN DIEGO has announced the opening of a unique position for public service and career advancement. The city seeks candidates for the job of director of Mission Bay Park, a $26,000,000 municipal aquatic recreation project financed by city, state, and federal funds, which is now half completed after seven years of construction.

The Mission Bay Park Director will work under the direction of the City Manager and within the framework of policy developed by a five-member advisory commission. He will be responsible for planning, promoting, developing, and directing the continuing improvement of Mission Bay Park and its facilities as an international tourist attraction producing revenues commensurate with the investment.

Applications for the position, which pays from $749 to $909 monthly, must be filed before June 18, 1954. Forms may be obtained, together with additional information, from Raymond Krah, Personnel Director, San Diego City Civil Service, Room 453, Civic Center, San Diego 1, Calif.

Effective Regional Planning

Easton Provides Example

By JAMES R. WOGLOM
Assistant Division Engineer
Morris Knowles Inc.
Pittsburgh, Pa.

PLANNING in the Easton Area of Pennsylvania has been an everyday function of local government since the creation, in December 1951, of the Easton Area Regional Planning Commission.

The constitution of the Commission was adopted by legislative act of the seven communities in the metropolitan area — the central city, Easton, the Boroughs of Glendon, West Easton, and Wilson and the Townships of Forks, Palmer, and Williams. Each community has one representative and each community appropriates money to the Commission for its use.

Development of Zoning Ordinances

The first objective of the Easton planning program was the development of zoning ordinances for the regional area. At the present time six of the seven member municipalities are zoned or are in the process of adopting zoning ordinances.

Highway zoning has been given careful study by the Regional Planning Commission and recommendations have been formulated to bring zoning of this type into accomplishment. The present program for regulatory codes in the region calls for the adoption of coordinated subdivision regulations and building codes. The central city, Easton, is this year engaged in an extensive review and rewriting of its regulatory codes.

Extension of Sewerage Service

The City of Easton, as part of the Pennsylvania Clean Streams Program, constructed a new sewage-disposal plant in 1952. Part of the collection system to this new plant is outside the city and is owned by the Borough of Wilson. This necessitated a renegotiation between the city and the borough of a long-standing contract for sewage-disposal service.

The new rate to the borough was approximately three times the old rate, but the Borough of Wilson representative to the Regional Planning Commission publicly went on record in approving the new rate as fair. The good relations created by regional planning helped foster an amicable solution.

The Easton planning program was also concerned with the planning and development of the new U. S. 22 major east-west limited-access highway. At the time the new disposal plant was under construction, the State Highway Department was beginning construction of the new highway, almost on the boundary line between a borough and township in the Easton region.

The township—Palmer—was rapidly growing in the area near the new highway. The area is rapidly reaching the point where septic tanks and cesspools will not carry off the sewage. The Easton Sewage Disposal Plant was designed large enough for the Easton region as well as for the city. Sewers for the populated area of Palmer Township are in the discussion stage. However, any sewer line from the township to the sewage-disposal plant would have to cross the line of the new highway.

The problem was obvious—a sewer line put in before the highway was built was cheaper than trying to reopen or tunnel under the highway at some future date.

The Regional Planning Commission invited the Palmer Township Supervisors, the City Council of Easton, and the Council of the intervening Borough of Wilson to sit down with the Commission to discuss the problem.

After much discussion it was agreed that a sewer line should be

put under the highway, capped at both ends, against the day when the township was sewered. Action was taken to effectuate this proposal. The sewer line is now in. The cost was roughly $4,200—a saving of $13,000 to $16,000 for the township over the cost of installation after the highway had been completed.

Other utility problems are officially referred to the Regional Planning Commission. Water problems between the municipalities are now in the process of being handled in the same fashion. An over-all study has been prepared to determine the probable regional service area for all utilities. The next step to be recommended in the program is a drainage study to determine the most suitable drainage districts.

In 1925, the City of Easton was bequeathed a 105-acre park, which is outside the City of Easton but in the middle of the Easton region. The city has partially developed the park for recreational uses, but has never been able to improve it to its full potential.

The new U. S. 22 Highway goes through the lower portion of the park. As a result, there are land-damage costs accruing to the city which the city solicitor has ruled must be used in the park.

The Easton region has for a long time needed an outdoor swimming pool. The city from the damage costs now has a sum to begin the development of such a pool. In addition, the Borough of Wilson collected some money after the war for a memorial pool, and these funds have been pledged for use in building a Regional Memorial Pool.

The Regional Planning Commission has developed a recreation plan for the park and is in the process of recommending the creation of a Regional Authority to construct the pool.

Planning for future school-plant expansion unrelated to the many interrelated phases of community life is unrealistic and ineffective. In line with the suggestion of Harold E. Martin, Coordinator, School Facilities Survey, Department of Public Instruction of the Commonwealth of Pennsylvania, the services of the Regional Planning Commission were offered to the Northampton County Board of School Directors.

The County School Board officially recognized the Easton Area Regional Planning Commission as the duly constituted planning agency for the area comprising its seven municipalities, and the Commission is now in the process of increasing its scope to include representation from the school boards.

Traffic and Parking Planning

The new U. S. 22 goes through the heart of the City of Easton, also Easton, as every other city in the nation, needs off-street parking facilities. To attack this problem the city fathers appointed a Parking Authority.

The City Planning Commission prepared a detailed circulation and parking plan and recommended certain sites for action by the Authority. The Authority selected as its first site an area adjacent to the exit from the new U.S. 22 Highway. The City Council, City Planning Commission, and Authority have all agreed on the site and the Authority is now in the process of acquisition.

A second site is under consideration. A pending arrangement with the Merchants Association has increased its possibilities for completion in the near future.

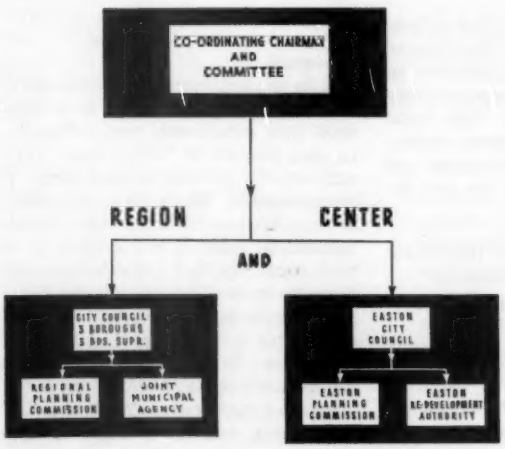
The City Planning Commission at an early date realized the need for industrial sites within the city proper that would be able to compete with open land beyond the city limits. As a result, the Easton Redevelopment Authority was created.

Redevelopment Planning

The Authority is now preparing a loan and grant application for a 4-acre tract from the Housing and Home Finance Agency. The Authority is in the midst of discussions with two or three potential industrial redevelopers.

Other problems referred to the City and Regional Planning Commissions include health organization, school capital-improvement requirements, traffic-control problems and regional library service.

The coordination of the Central City and Regional Programs has been a major undertaking. But local initiative and cooperation have given the Easton area a strong planning program which is an everyday function of sound local government.



Planning organization in the Easton region and in the Center.

Instruments Essential To Modern City Planning

PLANNING, as we understand it, in comparison with medieval procedure, has not only to do with the anticipated use of such technical instruments as our unprecedented grading machines, which transact equally unprecedented earth movements on a giant scale, our wonderful paving machines, which will take care of more than 30% of the area of the new town, our know-how in tunneling under rivers or downtown sections, our engineering of huge and complex speedway interchanges, our electric signalling of traffic . . .

Our planning depends also on other technical instruments, unknown to the ancients: typewriters producing eight variously colored copies of each inter-office memo, and mimeographing, blueprinting, mathematical computing equipment. Our modern planning presupposes an army of surveying, soil-testing, tabulating crews and a host of other activities. . . .

RICHARD J. NEUTRA

[From a paper on "Influence of Science on the Metropolis," presented on January 8, 1954, at Columbia University's Bicentennial Conference on "The Metropolis in Modern Life."] See also "Practical Cities Must Not Be Full of Irritations," THE AMERICAN CITY, April 1954, p. 122.

Ice skating in Williston, N. D.—making use of all community resources.

Five Principles of Community Recreation Leadership

By WALTER L. STONE *
Professor of Sociology
Hanover College
Hanover, Ind.

THIS ARTICLE summarizes some of the leading points in the book, *Recreation Leadership*, and is based on more than 30 years experience by the author in the field it covers.*

I

The first principle is developing an appreciation of the meaning and potentiality of leisure in the modern culture of the Western world. Leisure time—time in which there is no enforced task to complete and when we can do something of our own choosing — is more widely available than ever in the history of man, and is certain to increase.

We know too little about the possible uses of leisure time. We know a great deal about work. Leisure can be the creator or destroyer of civilization—the constructive or destructive factor in the development of character. The problem is how shall we use our leisure? It can be used for decreation as well as recreation.

II

The second principle is that recreation (re-creation) is the business of leisure time and its significance in the broad and total education of man needs to be understood. The basic needs of people in modern society that recreational opportunities and leadership must provide for and include are:

(a) The exercise of both the larger and smaller muscle systems
(b) The sharpening of the sense perceptions
(c) The manipulation of varieties of material
(d) Neuromuscular coordination
(e) Enjoyment in discovery
(f) Collaboration and cooperation with others
(g) Activity that is intellectually and emotionally satisfying
(h) Activity that is conducive to quiet contemplation
(i) Opportunity for self-fulfillment.

Recreation, therefore, is a living force in the pattern of life that has creative and therapeutic values. It is the satisfaction of human hungers: self-expression, fellowship, recognition, competition, cooperation, and adventure.

It is an approach, a psychological response, a way of life. It is an attitude that exhilarates and refreshes. In this respect it differs from work only in its motivation and form of compensation. Recreation, therefore, is for all ages and conditions of man and for all seasons of the year. It is both organized and unorganized and it varies according to individual and group interests and needs. The primary aim of recreation is human happiness. Life and education during leisure that is re-creational is the pursuit of significance. The pursuit of significance and the pursuit of hap-

* The author is serving as Consultant on Community Recreation in Madison, Ind., and his son, Charles G. Stone, co-author of the book *Recreation Leadership*, is Director of Recreation in Williston, N. D. The book is published by The William-Frederick Press, 313 W. 35th St., New York, N. Y. 1952. $2.

A painting class in Williston demonstrates the potentiality of leisure and its uses.

piness are the same thing. Recreation is its own exceeding great reward. It is the art of living.

III

A third principle of community recreation is through democratic community planning and organization to bring about cooperation and coordination of all resources—public-tax, private, and semipublic agencies—to make use of all existing facilities — schools, churches, rivers, lakes, libraries, and museums — to continuously study and evaluate individual and community needs and interests and opportunities of meeting them.

This is often a slow process, but it is democratic, whereas a faster process might be autocratic, paternalistic, and totalitarian. The basic principle of democratic planning is that it is through the means that the ends are secured.

Community planning in itself is one of the recreational possibilities of the new leisure. Both recreation and democracy mean that we plan with each other to do the things we want to do. It is not something done for us.

IV

A fourth principle in democratic community recreation is that community recreation should be social and not discriminatory, all inclusive as far as the members of the community are concerned, and broad in program including drama in all forms, music, arts, hobbies, crafts, games, sports, camping and outdoor education, reading, fairs, festivals, pageants, discussions, forums, museums, and creative writing, and doing nothing; anything and everything that is engaged in voluntarily for the satisfaction there is in it for those participating is recreation.

The uses of leisure will be creative, if the activities—

—are genuinely interesting, and artificial motivation is not necessary to arouse interest;

—are fun and are possible through most of one's life;

—are thought-provoking, and there is opportunity for evaluating;

—are refreshing to body, mind, and and spirit;

—are engaged in for their own sake and not for some extraneous reward;

—release physical energy and emotions;

—provide for human association, recognition, response, and understanding;

—are engaged in with enthusiasm and have a lead-on interest to a variety of activities—

and if the activities

—do not exploit or harm anyone else;

—provide for self-expression and balance, providing for individual differences, and encouraging the starting of new things;

—maintain man's status and dignity as a man;

—lead to social sensitiveness and cooperativeness;

—make life meaningful and well rounded.

V

The fifth principle is that trained and qualified recreation leaders or recreationists to guide the total program are essential. Such leaders are prepared and trained in a variety of skills, in activities and special events, in sharing responsibilities and getting common group action on boards, committees, citizen groups in counseling and guidance, in performing administrative duties, in supervising and training volunteers, and in evaluating programs and reconstructing past experience into new and better ways of behaving. The recreationist is an organizer, administrator, and an educator.

The Recreationist as an Informal Educator

The recreationist as an educator, and informal educator, has skills that are unique in combination:

First, the recreation leader must be skilled in opening up the universe to people from a single interest. Every activity, every experience has a whole gamut of interests related to it that can be explored. The universe is a unit and you can begin at any point and move all over it.

Flower in the crannied wall,
I pluck you out of the crannies
. . . If I could understand
What you are, root and all; and
all in all,
I should know what God and man
is.

Second, the recreationist or recreation leader has a wide range of interests and skill that he enjoys applying and an urge to develop more of them. "The world is so full of a number of things that we should all be as happy as kings." The recreationist is continually adding to this number of things.

Third, the recreationist's program is not subject-matter-centered or person-centered, but person-in-situation-centered. He has a great trust in primary groups—autonomous groups of friends—with community of interests, participation, and mutual responsibility. Enduring values exist only in mutuality, not in isolation.

Fourth, the recreationist is a cultivator of the social soil in order that the personality of each person may grow toward the sun of its own destiny. He knows that people act the way they feel about things rather than the way they know. Therefore, he gives close attention to the marginal learnings in each and every recreation experience, for it is in the

Bicycle rodeo in Williston—community recreation programs should be broad.

marginal learnings that attitudes are developed. These attitudes of outlooks and insight, appreciations and means of control, are more important than any other learnings.

Fifth, the recreationist employs the process of group work and understands group dynamics in a democracy. Training in democracy means training in consensus, not just parliamentary procedure. It means that all concerned participate. It means learning to solve conflict not by fighting, dominating, or compromising, but by creative experience. He works with people, and never for them. He provides the opportunity for learning self-direction, self-control, purpose, and moral responsibility, in the only way these things can be learned—and that is through practicing them.

Sixth, the recreationist emphasizes enjoyment rather than perfectionism. He does not act mainly on the principle that anything worth doing is worth doing well, but rather that anything worth doing from which a person gets refreshment and enjoyment is worth doing, whether it is done perfectly or not. He wants more participants, not more experts.

The recreationist, therefore, is a gardener in the social soil and atmosphere of the community during the leisure time of people, seeking to provide and utilize all the facilities (social soil) and to cultivate the spirit (social atmosphere) in which everyone can have fullness of life through leisure. This is the work of the recreation leader or recreationist whether he is employed as an executive, supervisor, staff worker, field representative, consultant, instructor, or research worker; whether he is employed by a public school, municipal recreation department, park, social settlement, camp, church, youth agency, or hospital.

What Community Organizations Can Do To Help Maintain High Employment

PREVENTING A DEPRESSION in the United States is vital not only to the American people but also to the rest of the free world.

Realizing this fact, the Committee for Economic Development has rendered an important public service in making available in pamphlet form * the results of a study, by many of the nation's businessmen and economists, of the country's ability to resist and recover from economic declines.

An important section of the report, quoted below, summarizes the responsibilities for planning and action by business, financial institutions, the federal government, state and local governments, and local and regional community organizations. Here are the paragraphs of special interest to THE AMERICAN CITY's readers:

1. State and local governments should assess the needs for constructive, possibly revenue-producing, expenditures within their jurisdictions and should examine possible ways, including local authorities, for meeting these needs to a larger extent.

2. State and local governments should include in their annual budgets appropriate sums which are reserved for future capital improvements.

3. Many local governments operate under obsolete debt limits which would be severe obstacles to the continuity of their operations through a recession. These debt limits should be revised.

4. More jurisdiction should develop capital budgets of projects to be initiated over the next several years, a substantial part of which should be advanced to the blueprint stage. This will help maintain the volume of state and local construction, despite economic fluctuations, and would permit an increase of such construction if necessary as part of a national program in which the federal government would take the lead.

5. State governments should explore the possibility of reducing the obstacles that smaller subdivisions experience in raising funds in the national capital markets. This might be done by centralized marketing arrangements.

6. The maximum weekly amount of unemployment benefit should be raised in many states. The maximum duration of benefits should also be raised in many states toward the standards already reached in the leading states. Administration should be improved and eligibility rules re considered to reduce unjustified benefit payments. States that have not already done so should reconsider the possibility of extending unemployment compensation to workers in firms with less than eight employees.

Voluntary organizations at the local level, including businessmen, local government officials and other civic leaders, can do much to stimulate constructive action by all sectors of the community. Getting the vigorous and able people in a community together generates ideas and action. In fact, all of the things we have mentioned above as desirable are more likely to get done if there is a local face-to-face group devoted to their promotion.

Where special local unemployment problems exist, voluntary groups can be effective in encouraging the development of new industries. And local groups can forestall the emergence of such problems by surveying their community's economic prospects and taking corrective action if a future deficiency of employment opportunities is revealed.

---

* *Defense Against Recession: Policy for Greater Economic Stability*. 64 pages. 1954. Single copies free on application to the Committee for Economic Development (CED), 444 Madison Ave., New York 22, N. Y.

A Crisis In Old Shopping Districts*

THROUGHOUT THE COUNTRY during the past several years the dramatic expansion of retail trade facilities in the form of new integrated shopping centers has occupied the attention of land developers, merchandisers, investors, and city officials. The older business subcenters that have grown up at key locations to serve the residential areas of our larger cities have received scant attention.

The preoccupation with the new shopping center, on the whole, has been justified. The shopping center has deserved attention from the standpoint of answering a need created by urban growth and because of the desire to create better community facilities for shopping in new areas.

But, as these new shopping centers achieve stature, it is increasingly evident that attention must be turned to the older business districts. The need for prompt action to cope with commercial dilapidation and decay exists both in the principal business districts of small towns and cities, and in the subcenters which serve the older residential sections of our metropolitan areas.

The great importance of conservation measures in terms of municipal revenue becomes clear when it is realized that commercial land use in many cities accounts for as much as 15% and 20% or more, of total assessed property values.

Varying Effects

Congestion, obsolescence, and population movements have had varying effects on different types of long-established shopping districts, but these effects invariably add up to the fact that positive programs are needed to meet a very real threat to their healthy continuance. The problem is one of redesigning and reorganizing the older business district in such a way that it may either retain or regain its solvency and efficiency.

A practical scheme for conservation and rehabilitation of such districts should have the following objectives:

1. Unification of the district, architecturally and planning-wise, into a definite entity that will not shift its location or dissipate its drawing power, but will remain as a true center with continuing modernization, rebuilding, or self-development.
2. Improvement of site layout to provide adequate parking facilities, relieve traffic congestion, and minimize hazards to pedestrians inside the center.
3. Elimination of nonshopping land use within the center.
4. Provision of new attractiveness in terms of both appearance and convenience. Through cooperative action signs can be redesigned, facades beautified, and open space provided.
5. Protection of adjacent neighborhoods by setting the center apart from residential areas, and providing adequate trafficways into the shopping area.

Difficulties Are Evident

In some districts the job will be tremendous, or even impossible, because of physical or economic difficulties or because of owner, tenant, or

(*Continued on page* 193)

* Technical Bulletin No. 22, *Conservation and Rehabilitation of Major Shopping Districts*, upon which this article is based, is a publication of the Urban Land Institute, reviewed on page 205 of this issue, and may be obtained from the Urban Land Institute, 1737 K St. NW., Washington 6, D. C., for $5 per copy.

EDITORIAL NOTE: See also "Seven-League Strides Towards Orderly Traffic," page 121 of this issue.

How a typical shopping district might be rehabilitated and conserved.

Films for the Municipal Engineer

(*Continued from page 115*)

for purchase ($43) from The Institute of Inter-American Affairs, 499 Pennsylvania Ave. NW., Washington, D. C.

Dust Precipitation
1951. 16mm. 15 min.

Principles of centrifugal collection exemplified in the Multiclone, and of Cottrell Electrical Precipitation exemplified in Cottrells. Made from a telecast for educational purposes.

Available on loan from Western Precipitation Corp., 1016 W. Ninth St., Los Angeles 15, Calif.

Pur-O-Cel Filters in Swim Pools
16mm. Color. Silent. 25 min.

Available on loan from Proportioneers, Inc., 9 Codding St., Providence 1, R. I.

The Smoke Menace
1937. 16mm. Sound. 22 min.

Causes and effects of smoke and attempts of community planning to overcome this menace.

Prepared for Gas Industry of Great Britain and available on loan from Museum of Modern Art Film Library, 11 W. 53rd St., New York 19, N. Y.

Basic Sanitation
16mm. Color. 9 min.

Procedures in urban and rural basic sanitation programs for elimination of fly-breeding sources.

Produced for U. S. P. H. S. Available for purchase ($46.79) from Castle Films, 1445 Park Ave., New York 29, N. Y.; on loan from state or local health department.

LOCAL WATER DEPARTMENTS

They Saw Tomorrow
16mm. Color. Sound.

Public relations film describing Metropolitan Water District operations in bringing water from the Colorado River; animation of sources of supply and purification processes. Beautiful photography.

Available on loan from the Metropolitan Water District of Southern California, 306 W. Third St., Los Angeles 13, Calif.

Our Water Supply
1940. 16mm. Color. Silent. 14 min.

Charts the cycle of water, development of distribution and purification techniques and the Greenwich water system.

Available for purchase ($60) or loan ($2.50) from Greenwich High School, Photoplay Club, Greenwich, Conn.

Gift of a Glacier
1948. 16mm. Color. Silent. 30 min.

Arapahoe Glacier and connecting watershed for supply of water to Boulder.

Available on loan from Boulder, City Hall, Boulder, Colo.

Los Angeles, City of Destiny
16mm. Color. Sound. 35 min.

Water's place in city's development and phenomenal growth.

Available on loan from Audio-Visual Service, Los Angeles Public Library, 630 W. 5th St., Los Angeles, Calif.

The Romance of the Lewiston Water Supply
16mm. Color. Silent. 25 min.

Source of water in the mountains, causes of pollution, filtration plant, purification, and protective measures in laying pipelines.

Available on loan from City Engineer, Lewiston, Idaho.

Little Rock Water Supply
16mm. Black and White. Silent. 45 min.

Available on loan from Little Rock Municipal Water Works, Robinson Auditorium, Little Rock, Ark.

Water for the City
1951. 16mm. Color. Sound. 30 min.

Interaction between the water cycle and watershed, factors that damage shed, and conservation measures to restore areas.

Available for purchase or loan from University of California, Dept. of Visual Instruction, University Extension Bldg., Berkeley 4, Calif.

Water—Special Delivery
16mm. Color. Sound. 28 min.

Public relations film; pumping and treatment equipment, hydrants in operation, meters being repaired, shots of water being used.

Available on loan from Water Dept., City Hall, Elgin, Ill.

Water for Montrealers
16mm. Color. Sound. 15 min.

Setup and operations of municipal water works.

Available on loan from Crawley Films, Ltd., 19 Fairmont Ave., Ottawa, Ontario, Canada.

New York Water Supply
1941. Silent. 15 min.

Typical sanitary water system for large city. For school use.

Available on loan ($2.50) from Encyclopedia Britannica Films, 64 E. Lake St., Chicago, Ill.

Every Drop to Drink
16mm. or 35mm. 20 min.

London metropolitan water supply; types of filters.

Available on loan ($2.50) from British Information Service, 30 Rockefeller Plaza, New York 20, N. Y.

Water and Water-Treatment in Florida
16mm. Color. Silent. 25 min.

Sources of municipal water supplies, types of treatment plants in operation, laboratory and scenic shots.

Available on loan from Florida Section, American Water Works Association, Box 316, Cocoanut Grove Station, Miami 33, Fla.

WATER SUPPLY—GENERAL

Water
1947. 16mm. Black and White. Sound. 10 min.

Water in relation to society; rain and snow replenish earth; network of water supply; a modern filtration plant.

Available for purchase ($30) or loan ($1.50) from National Film Board of Canada, 1270 Avenue of the Americas, New York 20, N. Y.

As the Gentle Rain
16mm. Color. Sound. 30 min.

Natural and man-made cycles of water; Hackensack River, New York, watershed; processes of water purification, distribution; resource planning.

Available on loan from Hackensack Water Co., 4100 Park Ave., Weehawken, N. J.

Water Supply
1947. 16mm. Black and White or Color. Sound. 11 min.

Animated diagrams illustrate how water is obtained in different parts of country, how it soaks into the ground, how stored. Includes aqueduct from Colorado River to southern California, open canals, pipelines, tunnels and pumping stations, filtration plants, and research laboratories.

Available for purchase ($45, in color $90) or rental ($3, color $5) from Academy Films, Box 3088, Hollywood, Calif.

Water Supply
1947. Slidefilm, 60 frames. Black and White or Color. Silent.

Accompanies above film and available for purchase or loan as detailed above.

City Water Supply
16mm. Sound. 11 min.

Animated drawings of relationship between rainfall and life; need to guard city's water supply and distribution. For use in schools.

Available on loan ($2.50) from Encyclopedia Britannica Films, Inc., 64 E. Lake St., Chicago, Ill.

Water and the City
1946. Color. Sound. 30 min.

Workings of small-town water system from snowflake in mountain watershed through collection of water in streams, to filtration and treatment.

Available for purchase ($180) or loan ($15) from Barbre Motion Picture Productions, 1215 E. Virginia Ave., Denver 9, Colo.

Town Without Water
16mm. Black and White. Sound. 13 min.

How counterpart funds built pipeline to

bring water to small Italian village, relieving parched lands and meager doling of water.

Produced by E. C. A. and available on loan (small fee) from A. F. Films, Inc. (official distributor), Room 1001, 1600 Broadway, New York 19, N. Y.

WATER DISTRIBUTION—TECHNICAL

(See also film list on Sewer Construction and Maintenance)

The Test of Time
1942. 16mm. Color. Sound. 22 min.

Development of ground- or well-water supplies and manufacture of well screens and vertical turbine pumps.

Available on loan from Layne & Bowler, Inc., Box 6851, Hollywood Station, Memphis, Tenn.

The Centriline Process
1947. 16mm. Black and White and Color. Silent.

Centrifugal application of cement-mortar linings to water mains for reconditioning old lines or lining new steel pipe installations.

Available on loan from Centriline Corp., 140 Cedar St., New York 6, N. Y.

Trenton Cleans Its Water Mains
1950. 16mm. Color. Silent. 15 min.

Cleaning of 4-inch water mains at Trenton, N. J.

Available on loan from National Water Main Cleaning Co., 50 Church St., New York 7, N. Y.

Washington, D. C., Cleans Its Water Mains
1950. 16mm. Color. Silent. 15 min.

Cleaning of 48-inch cast-iron water mains in preparation for cement lining at Washington.

Available on loan from National Water Main Cleaning Co., 50 Church St., New York 7, N. Y.

Centrifugally Applied Cement Linings for Water Pipe 30 Inches and Upward
16mm. Part Color. Silent. 30 min.

Process in detail and tests conducted by Detroit.

Available on loan from Centriline Corp., 140 Cedar St., New York 6, N. Y.

Inserting a 36-Inch Gate Valve Under Pressure
16mm. Color. Silent. 22 min.

Available on loan from A. P. Smith Co., 545 N. Arlington Ave., East Orange, N. J.

Underground Arteries—The Story of Transite Pipe
16mm. Color. Sound. 32 min.

Use of Transite Asbestos-Cement Pressure Pipe for underground transmission and distribution lines in municipal water-works systems.

Available on loan from Johns-Manville Sales Corp., Transite Pipe Dept., 22 E. 40th St., New York 16, N. Y.

The Dixie Line Pipe
16mm. Color. Sound. 15 min.

Manufacture and installation of coated and lined steel water pipe mains.

Available on loan from Armco Drainage and Metal Products, Middletown, Ohio.

Over the Peak and the Blue Ridge
16mm. Script available. Mostly color. Silent. 35 min.

Construction of a 1,500,000-gallon elevated tank.

Available on loan from Indianapolis Water Co., 113 Monument Circle, Indianapolis 6, Ind.

Constructing Concrete Water Storage Tanks
16mm. Color. Silent. 15 min.

Constructing a 2,500,000-gallon prestressed concrete water-storage tank, Miami, Fla.

Available on loan from The Preload Corp., 211 E. 37th St., New York 16, N. Y.

Design and Construction of a Water Collection and Transmission System
16mm. Black and White. Sound. 25 min.

Entire project from location of water source, to construction of dam, transmission lines, pumphouses, and recording instruments.

Available on loan from Johns-Manville Corp., Transite Pipe Dept., 22 E. 40th St., New York 16, N. Y.

B-J Submersible Pump
16mm. Color. Sound. 25 min.

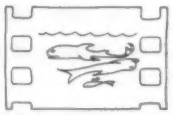
Underground water sources; characteristics of submersible pump.

Available on loan from Byron-Jackson Pump Co. Box 2017, Terminal Annex, Los Angeles 54, Calif.

H_2O
1944. 16mm. Color. 34 min.

Water safety on Corps of Engineers' large floating work plants, reservoirs, and dams.

Produced by U. S. Army in cooperation with Red Cross. Available on loan from U. S. Dept. of the Army, Office of the Chief Engineer, Technical Information Division, Pictorial Branch, Washington 25, D. C.



DANGERS OF WATER POLLUTION

Health and the Cycle of Water
1941. 16mm. Black and White. Sound.

Development of modern water- and sewage-treatment systems to prevent spread of certain communicable diseases. Illustrates the operation of treatment plants and emphasizes importance of water and sewage systems in the community. (A special 3-reel version includes engineering tests of cast-iron pipe.)

Available on loan from Cast Iron Pipe Research Assn., Peoples Gas Bldg., Chicago, Ill.

Let's Look at Water
1947. 16mm. Black and White. Sound. 20 min.

Complete account of purification process of a city's water supply.

Available for purchase ($60) or loan ($3) from National Film Board of Canada, 400 W. Madison St., Chicago, Ill.

Water—Friend or Enemy
1943. 16mm. Color. Sound. 9 min.

Water is a friend to man when proper precautions are taken to keep it pure; correct measures to keep spring water pure. For use in rural South America.

Available for purchase ($44) or loan from Institute of Inter-American Affairs, 499 Pennsylvania Ave. NW., Washington, D. C.; on loan ($1) from University of Illinois, Visual Aids Service, 210 Union Arcade, Champaign, Ill.; Ideal Pictures Corporation, 58 E. South Water St., Chicago 1, Ill.

Waters of the Commonwealth
1950. 16mm. Color. Sound. 25 min.

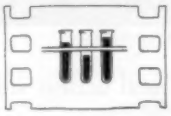
Shows relationship between pollution and everyday uses of water. Animation of growth of industrial waste and sewage treatment process.

Produced by state. Available on loan from Sanitary Water Board, Dept. of Health, State of Pennsylvania, Philadelphia, Pa.

Lakes and Streams of Minnesota
1950. 16mm. Color. Sound. 22 min.

Water-pollution problems in 1949. Benefits of pure water in health, recreation, industry, and agriculture. Shocking scenes of untreated sewage in upstate streams, and plea for restoration.

Available for purchase ($160) from Audio-Visual Extension Service, 230 Northrop Memorial Auditorium, University of Minnesota, Minneapolis 14, Minn.



WATER TREATMENT

(See also list of films on Sewage Treatment)

Sampling and Testing Drinking Water
Slidefilm. 74 frames. Color. Sound recording. 8 min.

Distribution restricted to state and local health departments, public health and medical schools, and professional organizations.

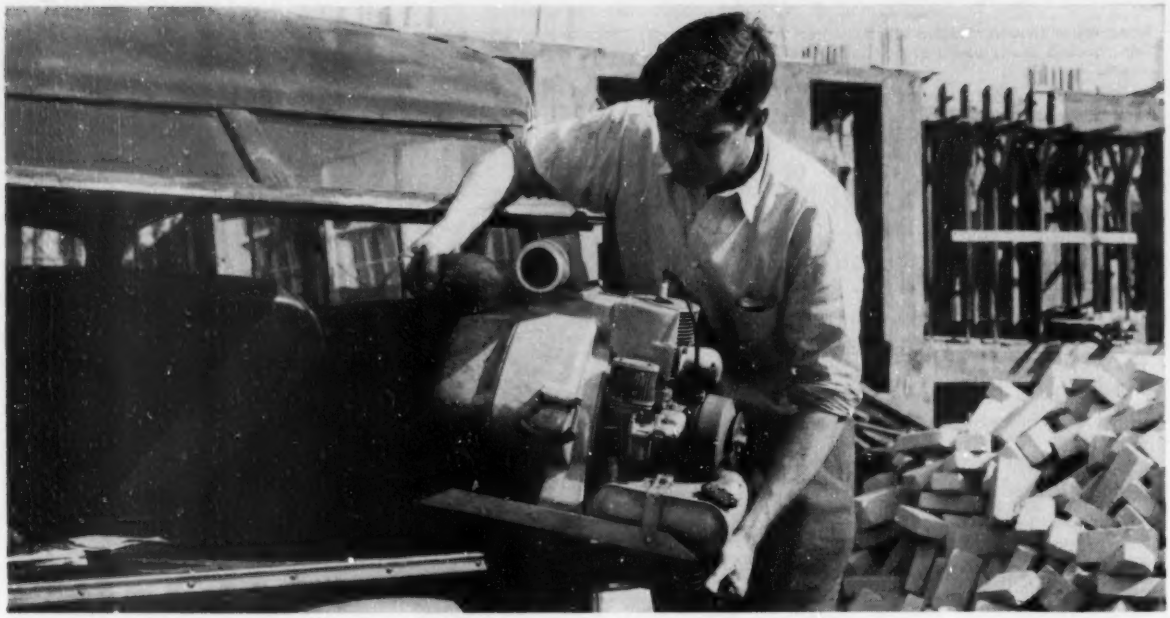
Produced by U. S. Public Health Service and available from state or local health departments.

Purification of Water
1943. 16mm. Black and White. Sound. 19 min.

Emphasizes danger of drinking polluted water and teaches methods of purifying water under various conditions.

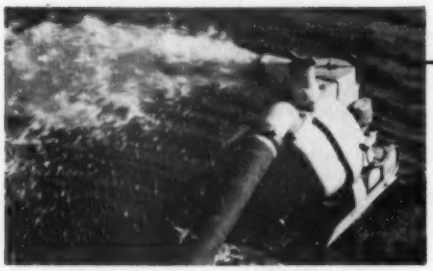
Available for purchase ($24.99) from

(*Continued on page* 187)



A HOMELITE PUMP

is **FIRST** on the job in more ways than one



FIRST to get on the job . . .

FIRST to complete the job.

There is the real action story of Homelite Gasoline Engine Driven Pumps.

They're first to get on the job, because they're small, compact, *carryable* . . . easy to put, by one man, anyplace you need them. Yes, and they're first to complete the job, because of their quick starting, self-priming, 28 foot suction lift, and pumping capacity which ranges from automatically controlled seepage up to 15,000 gallons per hour.

Before buying any other pump, see a Homelite Pump in action.

Write and we'll gladly give a free on-your-job demonstration.

Manufacturers of Homelite Carryable Pumps • Generators Blowers • Chain Saws

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE

CORPORATION

105 RIVERDALE AVENUE • PORT CHESTER, N. Y.

Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Ottawa.

Modern Water Rates

(*Continued from page* 107)

Billing Procedure

No. of Users	*Frequency*
12,851	annually
1,608	semiannually
239	bimonthly
36	monthly

Remarks

1. Water rates have risen between 30% and 35% in the past five years.
2. Schools, parks, municipal buildings and the city hospital receive water without charge.
3. Meters are placed in the building occupied by the water user.
4. No water department revenues are diverted to other municipal departments.
5. Meters 2" and smaller belong to the city. Large meters are owned and maintained by the water user.
6. Bills are prepared on International Business Machine equipment, using punched cards.

GROVER E. RICKARD
Water Superintendent

LEBANON, PA.

Rates Per Month

Size of Meter (in inches)	*Fixed Charges*
½	$1.30
¾	1.63
1	1.95
1¼	2.60
1½	3.25
2	5.20
3	10.40
4	16.25
6	32.50
8	52.00

Volume of Water (in gallons)	*Metered Charges* (per 1,000 gallons)
First 2,000	$1.30 (min.)
Next 5,000	.26
" 10,000	.195
" 15,000	.16
" 25,000	.105
" 50,000	.08
" 500,000	.07
" 500,000	.06

Flat-Rates Per Year (Incomplete)

Type of Service	*Charges*
Private dwelling	
Each tap without hose nozzle	$10.40
Each additional nozzle	2.60
Bathtub or shower	5.20
Each additional tub or shower	2.60
Water closet	
With hopper valve	10.40
Self-closing	5.20
Each additional self-closing unit	2.60
Lawn-sprinkling unit with automatic device	19.50
Automatic washing machine	6.50

Fire-Service Rates Per Year

Type of Service	*Charges*
Hydrants	
Each, publicly owned, outside city	$25.00
Each, privately owned, outside city	32.50
Automatic sprinkling connection, outside city	
8 inches	195.00
6 "	97.50
4 "	65.00
3 "	39.00
2 "	19.50

Miscellaneous Regulations

1. Meter readings are discounted 5% when paid within 15 days of date of bill, and are penalized 10% if not paid within 30 days.
2. Lawn sprinkling and air conditioning are controlled by permit.

General Data

Population served	40,000
Services (20% metered)	10,200
Hydrants	532
Valves	1,700
Miles of mains	99
Supply—river, springs, and creeks	
Treatment—chlorine, ammonia, lime, Calgon, alum, filtration	
Storage facilities—670,000,000-gallon, open, raw-water reservoir 1,250,000-gallon covered reservoir	
Average demand	7.5 mgd
Plant capacity	11.0 mgd

Metered Water-Use Costs Per Month

In Gallons	*In Cubic Feet*	*Costs*
3,000	400	$1.56
5,000	667	2.08
10,000	1,333	3.19

Remarks

1. Rates have increased 30% in the past five years and are currently being studied by a consulting engineer.
2. Free water is contributed to churches, schools, and fire hydrants within city.
3. A portion of water funds is diverted to meet some city administration costs.
4. About half the meters are owned by the city, the balance by the water users. All meters are located in users' buildings or in a meter box at the lot line. Meters are not checked on a regular schedule, but only when readings and other evidence indicate the need.
5. Bills are processed for mailing with an Addressograph machine.

KERMIT K. KOHR
Superintendent of Water

MONTCLAIR, N. J.

Rates Per Quarter

Volume of Water (in cubic feet)	*Charges* (per 1,000 cubic feet)
First 1,000 or less	minimum $3.00
Next 9,000	2.60
" 90,000	2.00
" 900,000	1.50
Excess	

Miscellaneous Regulations

1. Minimum charge is $3.00 per quarter.
2. City makes no restrictions on lawn sprinkling or air conditioning.
3. Fire service charges are made on request for special service.
4. Large users are billed monthly on a schedule with blocks proportionately smaller.

General Data

Population served	65,000
Services (95% metered)	10,331
Hydrants	998
Valves	2,940
Miles of mains	2,940
Supply—North Jersey District Water Supply Commission reservoir	
Treatment—chlorine and ammonia	
Storage facilities—2,500,000-gallon standpipe 1,500,000-gallon covered reservoir	
Average demand	4.5 mgd
Plant capacity	31 mgd

Water-Use Costs Per Quarter

In Gallons	*In Cubic Feet*	*Costs*
9,000	1,200	$ 3.60
15,000	2,000	6.00
30,000	4,000	10.00

Remarks

1. Rates have risen approximately 13% in the past five years.
2. Water Bureau contributes no water free to any service except municipal departments.
3. Surplus water funds are placed in the Town General Tax Fund.
4. Meters are checked on a regular 10-year replacement schedule. They are the property of the Bureau and placed in the building occupied by the user.
5. Bills are prepared on a National Cash Register accounting machine.

A. A. BRUSCH
Superintendent of Water

DAYTON, OHIO

Rates Per Quarter

(Minimum charge includes 1,000 cubic feet)

Size of Meter (in inches)	*Charges*
⅝	$ 2.10
¾	2.75
1	3.75
1½	6.00
2	9.00
3	16.50
4	24.00
6	46.50
8	76.50
10	126.50

Volume of Water (in cubic feet)	*Charges* (per 1,000 cubic feet)
First 9,000	$1.50
Next 90,000	1.20
" 400,000	.90
" 500,000	.60
Over 1,000,000	.50

Miscellaneous Regulations

1. Bills are discounted 5% if paid within 12 days; a 5% penalty is invoked if paid after 20 days.
2. Sewer-service charges are billed with water charges.
3. No extra charge is made for public or private fire protection.
4. No restrictions are made on water use for lawn sprinkling or air conditioning.

General Data

Population served	318,000
Services (100% metered)	68,520
Hydrants	1,296
Valves	12,310
Miles of mains	512
Supply—rivers and wells	
Treatment—rapid sand filtering, lime-soda softening	
Storage facilities—two 2,000,000-gallon elevated tanks six standpipes of 200,000 to 1,000,000 gallons capacity covered reservoirs with 46,000,000 gallons capacity	
Average demand	46.6 mgd
Plant capacity	96 mgd

Water-Use Costs Per Quarter

In Gallons	*In Cubic Feet*	*Costs*
9,000	1,200	$2.40
15,000	2,000	3.60
30,000	4,000	6.60

Remarks

1. In the past five years, rates have been raised 7.7% for small users and up to 85% for large users.
2. Other municipal departments receive water without charge.
3. Charges to churches and charitable institutions are reduced 50%.
4. No water-revenue funds are diverted to other municipal functions.
5. Each meter is checked for accuracy every ten years, or whenever 100,000 cubic feet of water has passed through it. They are located in the build-

(*Continued on page* 193)

NORTH—Shakopee, Minnesota praised Northern States Power Co. for installing Form 206 fluorescents. The new lights provide superior illumination even in sub-zero weather.

EAST—Central Maine Power Co. accomplished their working objective of providing better street lighting economically by installing Form 206 fluorescent lights at Auburn, Maine.

NEW G-E FLUORESCENT STREET LIGHTS GAIN NATIONWIDE ACCEPTANCE

Are fluorescent street lights practical? Utility and municipal officials who have installed G-E Form 206 fluorescent luminaires are best qualified to give the answer. Their actual field experience, in all parts of the country, is summarized in the following questions and answers.

WHY USE FLUORESCENT STREET LIGHTING?

Fluorescent street lighting provides better visibility and a more even light distribution than the best engineered systems of either filament or mercury lamps. The low brightness of the light source reduces the glare and eye strain that accompanies other types of street lighting.

IS VISIBILITY IMPROVED?

Yes. Many lighting experts believe that fluorescent street lighting increases actual visibility by about one-third. Thus, a 1.25 footcandle level from a Form 206 fluorescent luminaire seems to provide the same visibility as a 1.7 footcandle level from filament or mercury luminaires.

IS THE COLOR OF THE LIGHT PLEASANT?

Yes. The whiter light furnished by the fluorescent lamps does not distort the familiar coloring of objects and people. Businessmen find that shoppers even come from outside usual trading areas to shop under the comfortable light from the fluorescent luminaires.

IS THE SIZE OF THE LUMINAIRE A PROBLEM?

No. The Form 206 luminaire is only slightly over six feet long and the distinctive size and shape add functional beauty to the appearance of any street or roadway. No guys or trusses are required to support the luminaire even in high winds.

WHAT MAINTENANCE IS REQUIRED?

Maintenance is reduced! The fluorescent lamps used in the Form 206 have an average lamp life of 7500 hours, or about two years of street-lighting operation. The hinged plastic globe is shatterproof and is tightly sealed to prevent dirt or insects entering the unit. Sun, rain, heat, cold, or aging do not adversely affect the plastic globe or the light output.

HOW DO COSTS COMPARE?

When over-all lighting costs are computed on an equivalent visibility basis, G-E Form 206 fluorescent luminaires cost less than any other comparable system of filament or color-improved mercury. Although equipment and amortization costs are somewhat higher, installation costs are comparable, and operating costs are generally lower.

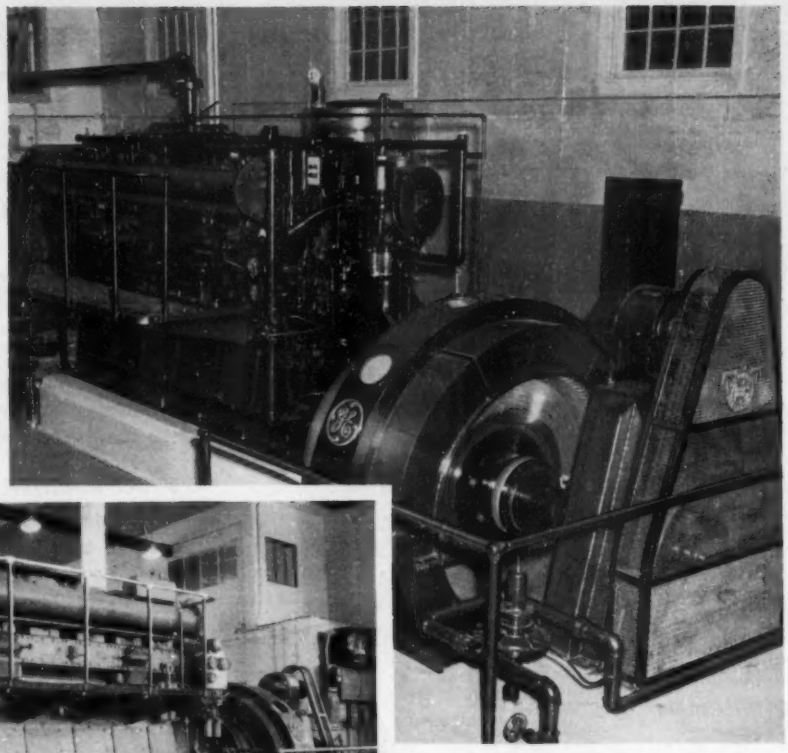
GET MORE INFORMATION about this outstanding G-E fluorescent luminaire, the Form 206. Contact your nearest G-E Apparatus Sales Office, or write Section 452-139, General Electric Company, Schenectady 5, N. Y.

SOUTH—Statesville, North Carolina installed 104 Form 206 fluorescent street lights and was enthusiastic about their visual comfort, economy, and modern appearance.

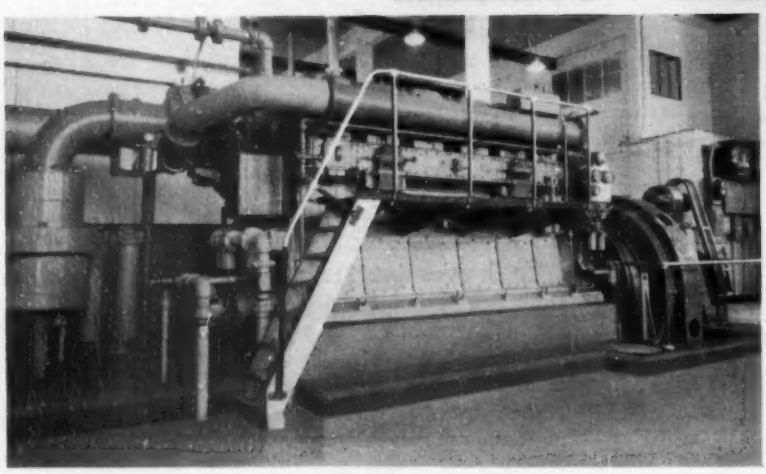
WEST—Virtually glareless illumination and an even light pattern resulted when Seattle installed Form 206 luminaires to light the second level of this new Alaskan Way viaduct.

GENERAL ELECTRIC

Another Example of Efficient Power at Lower Cost



A third Cooper-Bessemer JS-6 Gas-Diesel was recently installed at Terrace in British Columbia, bringing the plant's net capacity to 1500 kw.



Operating around-the-clock, this Cooper-Bessemer JS-6 Gas-Diesel rated 865 hp at 450 rpm is providing top performance at Dawson Creek in British Columbia.

COOPER-BESSEMERS...

A Natural for the Rigors of British Columbia

RECENTLY installed Cooper-Bessemer Diesel engines are helping generate electric power in rugged British Columbia with the exceptional efficiency and economy that has become routine with Cooper-Bessemers everywhere.

At Dawson Creek, where temperatures often drop to around 40° or 50° below zero, a new Cooper-Bessemer JS-8 Gas-Diesel engine has increased the plant's net capacity to 3,000 kw. This station, at the terminus of the Alaska Highway, handles one of the biggest Diesel-generated loads of any of the British Columbia Power Commission districts.

Another Cooper-Bessemer JS-6 has been added at Terrace, bringing the plant capacity to 1,500 kw.

More than twelve times as many customers are now serviced by the Terrace plant than in 1945.

Have you considered Cooper-Bessemers as the solution to your power problems? Check with your nearest Cooper-Bessemer representative for the latest information on dependable Gas-Diesels and how you can save money.

MOUNT VERNON, OHIO

COOPER-BESSEMER

GROVE CITY, PENNA.

New York, N. Y. • Washington, D. C. • Gloucester, Mass. San Francisco, Calif. • Houston, Texas • Seattle, Wash. Los Angeles, Calif. • Chicago, Illinois • St. Louis, Mo. Cooper-Bessemer of Canada, Ltd., Edmonton, Alberta—Halifax, Nova Scotia • San Diego, Calif. • New Orleans, Louisiana

Thinking about

Civic Improvement?

Let's not forget the poles!

CIVIC mindedness has reached an all-time high. Townspeople are proud of their wide smooth boulevards, their modern structures of glass and steel. And they are increasingly sensitive to anything that detracts from the general neatness and beauty of these surroundings.

With their slender grace and hidden strength, steel poles can become an integral part of *your* community improvement program. They bespeak progressiveness, pride, efficiency. They are signs of public service.

NATIONAL Tubular Steel Poles serve in many ways. Their slimness keeps them from being visual obstructions—traffic hazards; no finer lighting pole has yet been designed. When used for trolley wires their strength easily supports the tightest lines, even though steel poles need not be spaced nearly as close together as bulky, old-fashioned standards. And the upkeep on steel poles amounts to practically nothing—an occasional coat of paint at most.

For the sake of civic pride, progress, good business —and for the sake of the town budget, remember NATIONAL Tubular Steel Poles.

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION
PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

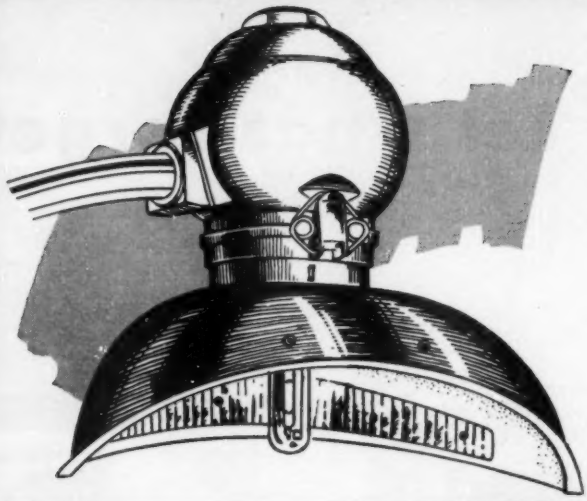
U·S·S NATIONAL *Tubular* STEEL POLES

UNITED STATES STEEL

Now- for the first time . . . . . an open

engineered by
Wheeler

100 WATT
MERCURY STREET LIGHTING UNIT



DESIGNED TO GRADUATE THE TRANSITION FROM BRIGHTLY ILLUMINATED MAIN THOROUGHFARES TO DIMLY LIT RESIDENTIAL STREETS

STILL ANOTHER EXAMPLE OF THE ADVANCED ENGINEERING THAT HAS MADE WHEELER STREET LIGHTING FIRST CHOICE IN MODERN, PROGRESSIVE COMMUNITIES EVERYWHERE

ALSO AVAILABLE WITH INTEGRAL PHOTOELECTRIC CONTROL FOR A COMPLETELY SELF-CONTAINED STREET LIGHTING UNIT

The new Wheeler 100 watt mercury street lighting unit provides approach lighting of a similar blue-green color on secondary streets adjacent to high intensity mercury light.

Sensitivity of the human eye to low intensities of blue light (Purkinje Effect) makes this lighting more effective than incandescent in areas of low lighting intensity.

The new Wheeler mercury unit gives 3300 lumens (initial), 6000 to 8000 hours life, and economics are comparable to small incandescent lamps with promise of future improvement.

Now available for multiple service only. Ballast contained in EEI-NEMA head. Absence of enclosing glassware in uniquely successful Crescent Reflector provides absolute minimum of first cost, plus fine optical performance without excessive glare.

Already in use by many utilities and municipal lighting plants, 100 watt mercury unit is another major advance in street lighting contributed by Wheeler. For further information, write Wheeler Reflector Company, 275 Congress St., Boston, Massachusetts.

Wheeler STREET LIGHTING

SPECIALISTS IN SKILLED LIGHTING SINCE 1881
275 CONGRESS ST. — BOSTON, MASS.

Harden Street, a wide avenue in Five Points, Columbia's second most important business area, has benefited from the new street-lighting improvement program that has been initiated.

Main Street, the principal commercial district of Columbia.

Lights

Bring Columbia, S. C. to Life at Night

By THOMAS F. MAXWELL
City Manager
Columbia, S. C.

THE CAPITAL CITY of South Carolina has embarked upon a program of installing adequate street lighting in commercial areas and on the arterial streets of the city. It is hoped that traffic accidents will be greatly reduced by this long-neglected improvement.

Main Street Relighted

On Main Street, 80 antiquated lights, installed 35 years ago and providing 0.2 foot-candle, were replaced with 20,000-lumen mercury-vapor lamps which provide 2.5 foot-candles. Westinghouse OV20 fixtures were used for this installation. This lighting extends north from the state capitol through the commercial area for 0.9 mile.

New lighting was installed also along Main Street from the commercial district to the city limits, using 15,000-lumen incandescent lamps. They provide 1.5 foot-candles for a distance of 1½ miles. The intensity before installation of the new lights was less than 0.2 foot-candle.

Lower Main Street, which is not a through street and receives only a limited amount of use at night, was lighted with 6,000-lumen incandescent lamps in pendent luminaires (AK 10 Westinghouse fixtures). This installation increased the intensity of light from virtually nothing to 0.8 foot-candle.

Five Points, the city's second most important commercial area, comprising about 10 blocks, had lights only at street intersections and the intensity of light was no greater than that provided in the residential part of the city. The 18 old-type fixtures were removed and seventy-six 10,000-lumen incandescent lamps in pendent luminaires were installed. The new light averages 1.2 foot-candles.

Summary and Cost

The old lighting installations in the areas mentioned consisted of fifty-five 10,000-lumen lamps, one 20,000-lumen lamp and eight 6,000-lumen lamps. These were replaced by one hundred fourteen 6,000-lumen incandescent lamps, seventy-six 15,000-lumen incandescent lamps, and eighty 20,000-lumen incandescent lamps.

The installation cost was $7,500 and the annual operating cost is $9,265. This is the first step in an over-all plan to install lighting on all traffic arteries and in commercial areas that will meet or surpass IES Standards.

The installations were made under the direction of City Electrician L. Talley Garren, and the general supervision of City Engineer Harry O'B. Bellinger. Additional street lights installed in all areas of the city during the last three years total 715.

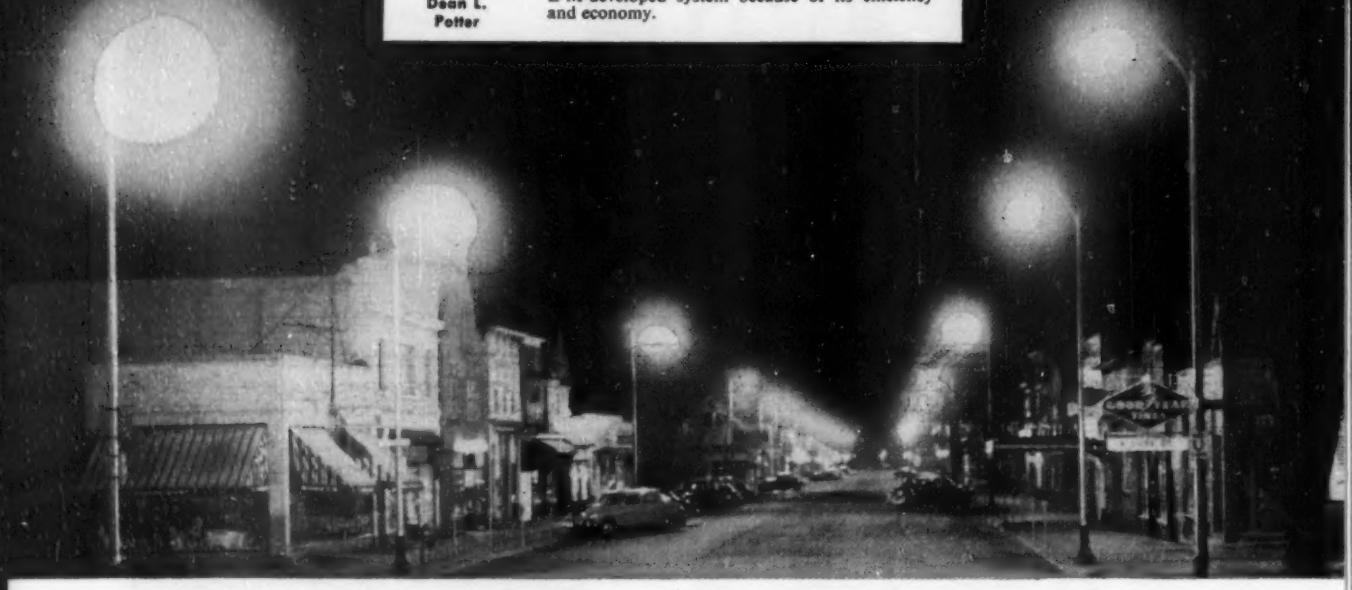
Giving More Thought To Street Lighting

FOR what it might be worth, the National Street and Traffic Safety Lighting Bureau asked the editors of the country whether "more" thought was being given now to improvement of their city's street lighting than was given a year ago or "no more." Of the 1,018 editors replying, 486 (48%) said more thought was being given street lighting in their town, and 532 said no more thought was being given.

Dean L. Potter

"Milwaukee Avenue has become the 'bright spot' of South Milwaukee with the installation of L-M's Uni-Ballast mercury vapor street lighting system," writes Mayor Dean L. Potter. "We are happy to report substantial savings in both installation and operation, and complete satisfaction with the system."

This system was put into operation July 2, 1952. Numerous other cities have since adopted this L-M-developed system because of its efficiency and economy.



L-M "Uni-Ballast" Lighting System A Proved Success Since 1952

Uni-Ballast is the series street lighting system for directly connected mercury vapor lamps. It eliminates individual ballasts; saves up to $90 per pole in labor and materials. Proved successful by numerous installations since 1952.

by **STACY STANDLEY**
Manager Lighting Sales
Line Material Company

Since July, 1952, when the first L-M Uni-Ballast system was put into operation, there has been a steady growth in interest in this revolutionary improvement in street lighting. Not only have more and more cities and utilities installed the system, but a number who have installed one system have ordered additional systems.

The L-M Uni-Ballast system offers marked economies. It eliminates individual ballasts, because 25 or more 400-watt mercury vapor lamps are operated in series on one Arctroller, L-M's static type regulator. These lamps would require a 25-kw regulator on a conventional series system.

The 25 lamps require only a single control station. Construction is simplified and more economical.

The Uni-Ballast system gives excellent cold-weather starting, because sufficient voltage is available to strike the lamp arcs. The maximum output voltage is limited by the saturation characteristics of the output transformer in the actual Arctroller circuit. When the Arctroller is connected to a mercury vapor lamp load, the voltage rises only to the value at which the lamp arcs strike. The Arctroller regulates faster than a moving coil regulator; surges are reduced to a minimum.

The system includes a voltage-sensitive time-delay relay, which prevents re-energization after outage until the lamps have cooled to the re-striking point. This protects lamp electrodes from unnecessary deterioration, minimizes bulb blackening, and assures greater lamp efficiency and maintains more uniform light levels. No half load starters required.

Power factor of the Arctroller is 94% to 100% between ½ and full load operation. This high power factor, and elimination of individual ballasts, saves about 12% in energy used.

*"Uni-Ballast" and "Arctroller" are trademarks of Line Material Company.

Some Uni-Ballast Systems Now In Operation Or Being Installed

Collinsville, Ala.
Lodi, Calif.
Emporia, Kan.
Oxford, Kan.
Boonville, Mo.
Elsberry, Mo.
Warrenton, Mo.
Broken Bow, Neb.
Sylvania Plant, Batavia, N. Y.
Galion, Ohio
Cleveland, Okla.
Chamberlain, S. D.
Lexington, Tenn.
Nashville, Tenn.
Ripley, Tenn.
Rockwood, Tenn.
Houston, Texas
Lockhart, Texas
South Milwaukee, Wis.
Sun Prairie, Wis.
Thermopolis, Wyo.

Get the Whole Story on This L-M-Developed System

For complete information on the L-M Uni-Ballast system, ask the L-M Field Engineer to discuss it with you; or write Street Lighting Division, Line Material Company, Milwaukee 1, Wis. (a McGraw Electric Company Division).

173

LINE MATERIAL Street Lighting

On Evaluating Night Highway Accidents

THE REALLY SAFE DRIVER sizes up all conditions and allows for them in his driving. He can travel successfully over very bad roads and in vile weather. He knows enough not to drive when conditions are worse than he can handle. Most road and weather conditions are not exclusive causes of accidents, but, when joined, or combined, with some unfortunate act or neglect on the part of a driver, or pedestrian, they may become partial causes of traffic accidents. You must now be careful not to jump to an unwarranted conclusion.

Reduced Visibility a Contributing Cause

Weather and darkness lessen the distance at which a driver can see things. Hazards appear gradually in the distance, and the driver may be close to a hazard before he realizes that there is one. Reduced visibility is often one of the causes of an accident, and it is often hooked up with some driver fault, and sometimes with surface conditions in a combination of causes.

A driver on a dark and stormy night could see a pedestrian only 70 feet away. With a wet pavement he could stop his car within that 70 feet *only* if he were driving *less* than 25 miles per hour. He was driving nearly 40 miles per hour. So when he finally saw the man on foot ahead, he could not stop soon enough to avoid striking him.

The accident had three contributing causes. If any of them had been missing, there would have been no accident. One was reduced visibility, the second was road slipperiness, and the third was driving too fast for conditions. Try to evaluate the seeing problem of the driver or the pedestrian. The best way is to put yourself in his position.

The driver has hit a pedestrian in dark clothing in a residential district. The investigator has a pedestrian in similar clothing stand where the victim was struck. Then, in a vehicle with headlights similar to those of the vehicle involved, the investigator approaches slowly and notes where he can first clearly see the pedestrian. He discovers that there is a deep shadow cast by some branches between the pedestrian and the distant light. The pedestrian cannot be seen against the dark background until the vehicle is within about 130 feet. At 45 miles per hour the driver would find it difficult to avoid hitting the pedestrian if he stepped in front of the car. Here is a seeing problem.

Often darkness and sometimes fog or smoke lead a driver to over-drive his headlights. This means driving so fast that you cannot stop in the distance that you can see an object in the road by your headlights. Overdriving headlights is not specifically a violation of law. Legally, it comes under the general heading of speed too fast for conditions, or speed that is not reasonable and prudent.

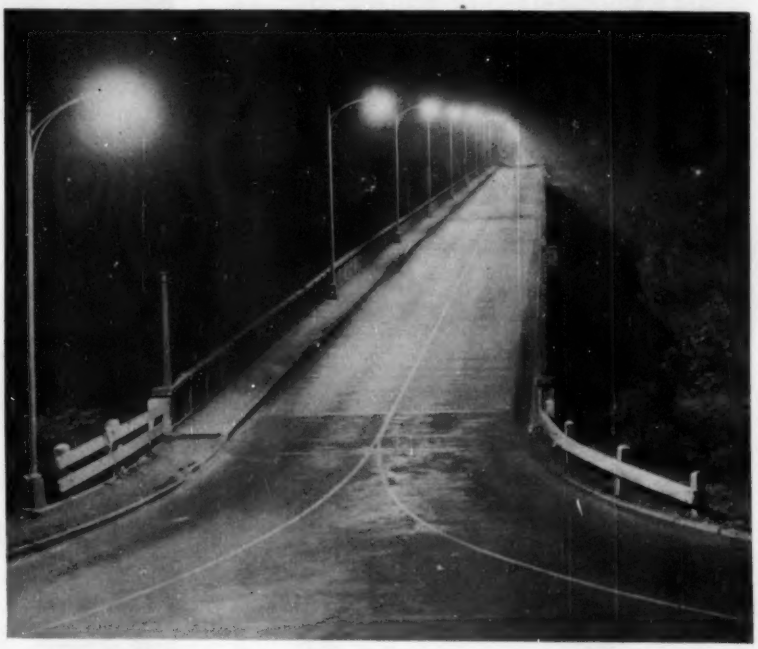
Evaluate the seeing problem by finding out how far away the hazard could have been seen with the light available. Do this experimentally if you possibly can. Try to get several different people to drive from a distance towards the spot and note how far from it they recognize the hazard. The seeing distance that a driver has in a *moving* car, in which he can stop, is always less than the distance he can see *standing still.*

Your seeing distance will usually be greater than his. The driver may not be able to see so well in the dark because of defective eyes. He is most likely to have low night-seeing ability if he is old or in ill health.

At night, always suspect over-driving headlights when a car hits a pedestrian, fixed object, a hole in the road, or any similar unlighted obstacle. Skidmarks in night accidents of these kinds usually mean overdriving headlights. The presence of skidmarks in such a case proved that the driver saw the hazard and tried as hard as he could to stop. The fact that he had the accident proves that he was going so fast that he could not stop in the distance at which he could see the hazard.

EDITORIAL NOTE: This article contains excerpts from *Traffic Accident Investigators Manual*, published by the Traffic Institute of Northwestern University, Evanston, Ill.

Mercury Vapor on Sellwood Bridge, Ore.



Completed in mid-1953, this is said to be the first mercury-vapor installation in the area immediate to Portland, and the first to cross the Willamette River. L-M Ovalite luminaires are mounted on 25-foot Union Metal aluminum poles with 6-foot brackets. Poles have been spaced approximately 90 feet apart on one side of the roadway. The lamps, which are used in the 20-ampere circuit, are 15,000 lumens.

From huge stadium to tiny horseshoe court . . . there's better play under CROUSE-HINDS Floodlights

Spectator's like them too!

You'll have bigger attendance at a well lighted field.

A Crouse-Hinds floodlight installation is an assurance that you will have a well lighted field . . . where both players and spectators can follow the play at night as well as in broad daylight.

Crouse-Hinds Type FLA is tops in high efficiency lighting, scientifically designed to get the maximum amount of light on the playing field. It's designed for easy maintenance too. Relamping and cleaning are so easy that upkeep costs are at a minimum. Type FLA has a two-piece Alzak reflector . . . cast aluminum head and body . . . extra large opening for cleaning . . . hinged body . . . self-aligning stop . . . degree markings, and a sight for accurate aiming. Crouse-Hinds high standards of quality and skillful workmanship insure long life and dependable service.

For more that twenty-five years Crouse-Hinds Illumination Department has planned the efficient lighting of all kinds of playing fields, large and small. This wealth of experience is at your service. Their engineers will gladly recommend the proper selection and arrangement of floodlights for any application.

Send for the latest Sports Lighting Bulletin. It contains lighting layouts for dozens of different sports. It's FREE for the asking.

CROUSE-HINDS COMPANY
Syracuse 1, N. Y.

OFFICES: Birmingham — Boston — Buffalo — Chicago — Cincinnati — Cleveland — Dallas — Denver Detroit — Houston — Indianapolis — Kansas City — Los Angeles — Milwaukee — New Orleans New York — Philadelphia — Pittsburgh — Portland, Ore. — San Francisco — Seattle — St. Louis — St. Paul Tulsa — Washington. RESIDENT REPRESENTATIVES: Albany — Atlanta — Baltimore — Charlotte Corpus Christi — Reading, Pa. — Richmond, Va. — Shreveport
Crouse-Hinds Company of Canada, Ltd., Toronto, Ont.

Type FLA . . . the modern floodlight designed especially for sportslighting by sportslighting experts.

A Nationwide Distribution Through Electrical Distributors

FLOODLIGHTS · AIRPORT LIGHTING · TRAFFIC SIGNALS · CONDULETS

Wonderland of Modern Lighting

Forty-five 20,000-lumen lamps have been installed on Big Horn Avenue in Worland, Wyo., a city of 4,200 residents. The Line Material Ovalite luminaires are mounted from 8-foot upswing brackets on 30-foot Carco poles, which are spaced 120 feet apart in staggered arrangement. Installation was done by the Mountain States Power Company after negotiations were completed with the City Council of Worland.

Garden Lighting, A Fashion in Atlanta

AFTER 10 YEARS without garden lighting, the Atlanta Residence Lighting Forum, wanted to be ready with ideas and plans for this type of lighting when materials would be available again, so we planned a Garden Lighting Project, in which 27 of the 78 Residence Forum members were active workers.

A formal garden and an informal wooded acre with a stream, bridge, and a small island, was lighted. Pink and white dogwood, colorful weeping cherry, hardwood, and pine trees surrounded a sunken garden, which was laid out with paths and grass plots, and which boasted a sundial at its center. These paths were bordered with yellow pansies and with pink, red, and white azaleas.

The Par 38 lamps were used to highlight the flowering trees, mercury-vapor illuminated the green leaves of other trees, and 10-watt lamps were used for border lights.

Improvised equipment consisted of a bird house made from a large fruit or tomato juice can which concealed an R-30 flood lamp. Border lights were shielded with homemade tulips, birds, and rabbits, and we used green lamp bulbs under tin lily pads to make the water in the stream appear clearer.

The night before showing we turned on the lights, and during the testing we heard a commotion up on the street. It was a traffic jam that needed a traffic officer to get it moving. Cars were parked on both sides of the street, and people were lined up on the sidewalk looking at our lighted garden. The owner of the garden requested that we leave the equipment over Easter weekend so that the public could enjoy the beauty of the garden brought to life at night.

We have received many requests for lectures on garden lighting. Our project really created a new fashion trend in Atlanta.

By EMILY ALEXANDER
Georgia Power Company
Atlanta, Ga.

Maryland Will Light State Road Intersections

THE Maryland State Roads Commission has a program which contemplates the lighting of heavily travelled and dangerous intersections and the interchanges along the primary system of state highways.

The lighting will have an intensity of 0.75 to 1 foot-candle, using mercury-vapor lamps of 20,000-lumen rating mounted at a height of 30 feet. So far, the lighting is being installed and maintained by utility companies at flat monthly and annual rates, using standard wood-pole equipment with overhead wiring. As the program advances to the expressways, metallic poles with underground wiring will be used. The poles are being purchased on a state specification.

CHARLES T. LEVINESS
Public Relations Director
State Roads Commission
Baltimore, Md.

Photoelectric Control For Outdoor Lighting

A NEW CONTROL DEVICE, based on the photoelectric principle and built around a dip-soldered etched circuit which simplifies maintenance and having built-in lighting protection is announced by the General Electric Company's Lighting and Rectifier Department for sensitive control of series or multiple outdoor lighting circuits.

Low-level illumination is offered with Types P-1 and P-1A for street-lighting circuits. High-level illumination is handled with Type P-2 and P-2A for airports. A Type P-1 unit is converted to a Type P-2 by the addition of a phototube shield.

Photoelectric control turns lights on exactly when they are needed, since the photo cell "measures" the amount of light in the sky. The new control is adjustable to operate under any conditions at a night level

from 1 to 6 or from 10 to 60 foot-candles at the "sky view" of the phototube. The "sky view" shield permits maximum light from the sky to strike the phototube while minimizing stray light from surrounding sources such as signs and headlights.

Greater sensitivity at lower light levels is provided by the high amplification of the two amplifier tubes. Phototube life is estimated at 20,000 hours and that of the amplifier tubes at 10,000 to 20,000 hours.

SO NEAT AND EFFICIENT...LOOKS EASY. Nothing spectacular. Just a typical new viaduct but with well planned, modern lighting facilities to meet today's night driving safety demands. Note the perfect alignment of those Monotube poles. Look how their slender, well proportioned design blends into and enhances the over-all scheme.

Such results *are* easy with Monotubes . . . because these distinctive poles offer you unmatched years of pole engineering experience . . . plus a range of designs and sizes developed to best meet any and every modern street lighting need.

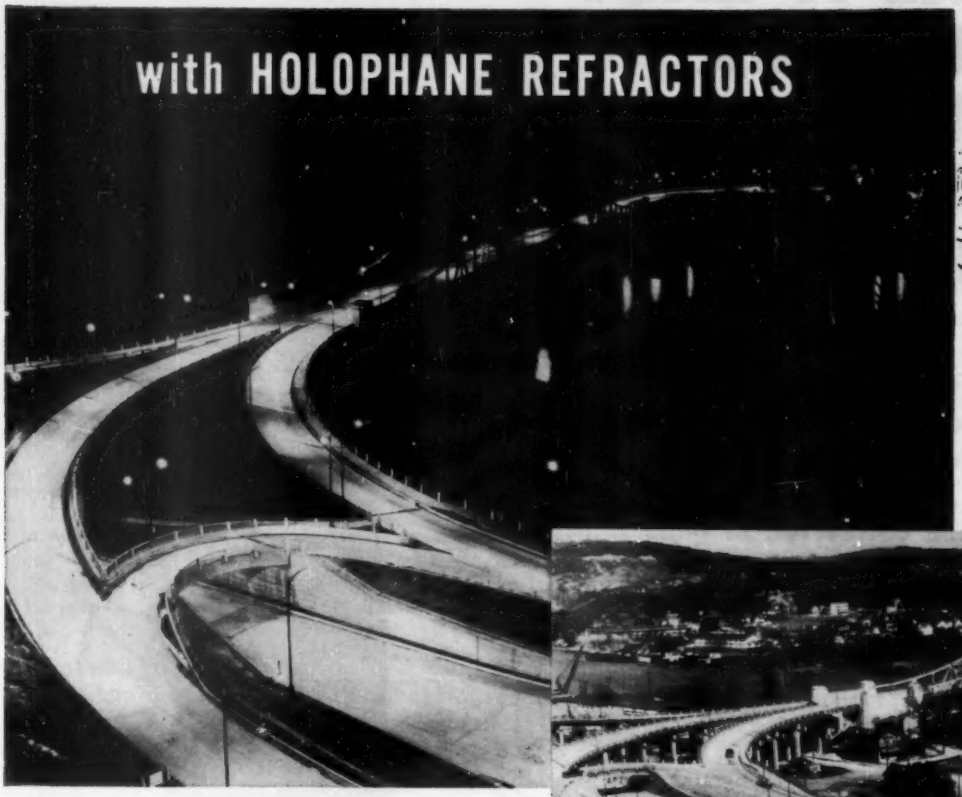
It will pay you to include these attractive, *cold-rolled* Monotube poles in your lighting plans. Write to The Union Metal Manufacturing Co., Canton 5, Ohio, for catalogs, specific data or engineering information.

UNION METAL

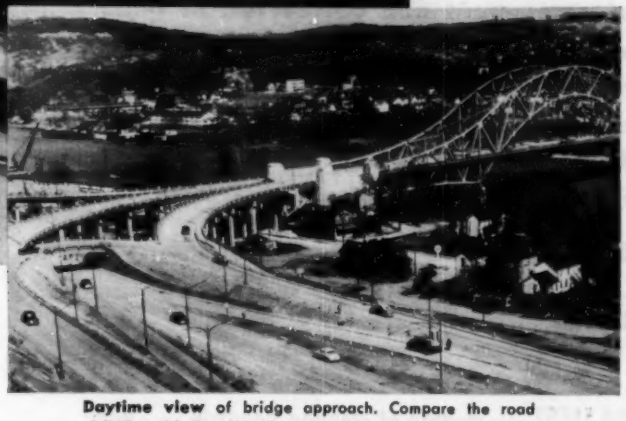
Monotube Lighting Poles

Daytime VISIBILITY *for Night-Time* SAFETY

with HOLOPHANE REFRACTORS



The New Elizabeth Bridge between Elizabeth and West Elizabeth, Alleghany County, Pa.



Daytime view of bridge approach. Compare the road visibility with the night time view (above left) of same area.

Another New Installation of Efficient HOLOPHANE REFRACTORS for MERCURY VAPOR LUMINAIRES . . . For Bridges, Interchange Areas, Super Highways

The increasing number of super-highways, with their stepped-up motoring speeds, has brought a demand for new and more efficient lighting systems to reduce night accidents. HOLOPHANE REFRACTORS meet that demand with utmost effectiveness. With their unique prismatic construction, they are specifically designed to utilize wasted light and put it only where it is most needed—over the roadway—to provide maximum visibility. They are economical to install and maintain, offer the greatest resistance to deterioration. Sound reasons why so many authorities recommend HOLOPHANE REFRACTORS to keep the new highways safe for after-dark traffic.

Night time view of interchange roads leading up to bridge approach.

Write for latest book: "Street Lighting, A Guide to Good Practice," available without charge.

Photos: Courtesy of West Penn Power Company

HOLOPHANE COMPANY, INC.

Lighting Authorities Since 1898 · STREET LIGHTING DEPARTMENT, NEWARK, OHIO

THE HOLOPHANE COMPANY, LTD., THE QUEENSWAY, TORONTO 14, ONTARIO

MAKE IT EA$Y FOR YOUR CITY

with an easier system for collecting fines!

With the ever increasing number of vehicles on streets and highways... in addition to adequate parking facilities and traffic controls... a more efficient method of assessment and collection of minor violations is required. To maintain progress... Duncan Parking Meter Corp. is now INTRODUCING A PRACTICAL SYSTEM FOR THE COLLECTION OF FINES... the DUNCAN FINE-O-METER

EASY... and accurate accounting for fines... with reduced clerical personnel and equipment.

EASIER... for the motorist... convenient... no stamps... no money orders... no trips to police station.

EASIEST... method of creating goodwill... eliminates any embarrassing situations.

EASIER... installation... attaches without removal of meter head on any standard post.

EASY... collection of all minor traffic offenses.

BOOK OF TICKETS
Collection system includes pre-numbered ticket-envelopes with city imprint.

Our traffic specialists will gladly give you all the details — personally or by correspondence.

DUNCAN FINE-O-METER

Manufactured by
DUNCAN PARKING METER CORP.
835 NORTH WOOD STREET CHICAGO 22, ILLINOIS U. S. A.
Makers of the DUNCAN-AUTOMATION fully automatic and the DUNCAN-MILLER manual parking meters

Pittsburgh's Traffic Regulations Successful

By MICHAEL J. GITTENS, *Traffic Engineer, Pittsburgh, Pa.*

DOWNTOWN PITTSBURGH, PA., is the economic center of a large Tri-State area. Over a period of years traffic congestion was a serious factor tending to decentralize the Business District. Approximately 97,000 vehicles enter downtown Pittsburgh, an area of 0.6 square mile, each day between 8:00 a.m. and 6:00 p.m., but most of the business activity is transacted in a small triangle only 0.25 square mile.

Following is a list of articles and the respective percentages purchased in *neighborhood* stores in 1941 and in 1951.

Article	1941	1951
Women's dresses, suits and coats.....	15.1%	25.6%
Women's shoes	22.2	28.5
Men's suits, topcoats and overcoats...	10.5	34.1
Men's shoes	27.2	50.7
Electrical appliances	32.4	65.8
Radio and television sets.....	27.6	62.0
Furniture and home appliances.....	13.9	37.5

For more than 25 years it was recognized that curb parking should be prohibited in order to improve traffic movement. The absence of ample off-street parking space precluded the possibility of eliminating all curb parking. The opening of new parking garages and parking lots, together with recognition of the fact that the demand for street space was reaching a critical stage, prompted the Better Traffic Committee and the Traffic Officials of the City of Pittsburgh to recommend that the following regulations be adopted:

NO STOPPING

8:30 a.m. to 9:15 a.m. and 4:30 p.m. to 6:00 p.m.

The NO STOPPING regulation prohibits parking and the loading or unloading of trucks in the morning and evening peak periods. Stopping to discharge or pick up passengers in readiness at the curb is permitted. This regulation covers the entire Central Business District.

NO PARKING AT ANY TIME

The NO PARKING regulation prohibits the drivers of private automobiles from parking on streets which are marked with signs reading: "TOW AWAY ZONE AT ALL TIMES." Truck loading and unloading is permitted in areas marked "TOW AWAY ZONE," providing that the loading is completed as expeditiously as possible, and that the total elapsed time does not exceed 30 minutes.

NO PARKING AT ALL TIMES EXCEPT SUNDAY

This regulation was recommended for those sections of the city streets where traffic moved freely on Sundays, and curb spaces were needed for people attending Church Services in the Downtown District. "TOW AWAY ZONE" signs were used for marking streets where this regulation was used.

NO PARKING 8:00 a.m. to 10:00 p.m. on MONDAY and THURSDAY

NO PARKING 8:00 a.m. to 6:30 p.m. on TUESDAY, WEDNESDAY, FRIDAY and SATURDAY

On many of the streets in the Business District, it was necessary to prohibit parking during the business hours of the day. Most of the stores are open on Monday nights, and some on Thursday nights, necessitating the extension of the parking regulation on those days. The term TOW AWAY ZONE was used on these signs.

10-MINUTE CUSTOMER LOADING

9:15 a.m. to 4:30 p.m.

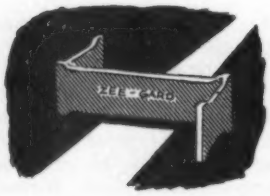
A 10-minute stopping privilege is provided on some of the wider streets where street space is not urgently needed for moving traffic, or where the limited stopping privilege does not interfere with the delivery of merchandise. This regulation was recommended in order to accommodate the driver of a private automobile who wishes to make a pick up or delivery.

In the fall of 1952, announcements were made, indicating to the public and to the business interests that revisions in the parking regulations were contemplated. Some organizations including the Chamber of Commerce, the Retail Merchants Association, and the Pittsburgh Real Estate Board expressed the opinion that a trial period would indicate the advantages or disadvantages of the proposed revisions. These groups agreed to the adoption of the regulations for a 60-day trial period.

Numerous objections were raised to portions of the proposed regulations by other merchants, theater owners, restaurant operators, building managers, and purveyors. Through a series of hearings, each group was

PRISMO ZEE-GARDS

Protection for wet highway lines, Zee-Gards are made of resilient rubber fabricated into "Z" shapes. Because Zee-Gards look like angle iron, motorists shy away from wet paint and remain in proper lanes. Zee-Gards are durable, light weight and easily stacked in limited space.



For Safety on the Highway— Stay on the Right Side of Prismo

Prismo LifeLine does more than just lie there! It meets you more than half-way with maximum reflection that shows you the road, the curves and all the markers. Prismo is not just a "fair-weather" friend, either. When nights are dark and stormy, when fog and rain make driving hazardous and a driver needs a friend . . . . you can count on Prismo because a special "moisture-pruf" ingredient makes Prismo LifeLine more reflective in the worst weather.

For 24 hour, all-weather visibility, year after year . . . it's Prismo LifeLine . . . more brilliant, longer lasting and more economical to apply than any other marking material!

532

PRISMO SAFETY CORPORATION
HUNTINGDON • PENNSYLVANIA

given an opportunity to express any objections and submit recommendations. In this manner most of the objections to the new regulations were abated.

In January of 1953, City Council was advised by the Department of Public Safety that the regulations would be placed in effect on February 1, 1953. The 60-day trial period indicated the many advantages that were obtainable through the revised regulations.

The merchants saw that the elimination of curb parking was not detrimental to business. Retail merchandising in the Pittsburgh area increased in volume in the same manner that retail sales increased in other cities. Studies made by the Bureau of Traffic Planning disclosed that more automobiles were passing through critical intersections during the peak hours, and the delays to traffic were reduced. The Pittsburgh Railways Company was able to reduce scheduled running time in the downtown district.

The trial period was extended, and the City Council approved an ordinance establishing permanent use of the regulations. Following approval by Mayor David L. Lawrence, the ordinance became effective on December 18, 1953.

The net result of these regulations is that there are no parking meters used in the area bounded by Liberty Avenue, Ferry Street, the Boulevard of the Allies, and Grant Street. All one-hour and 30-minute parking spaces have been removed. Where possible the parking spaces have been replaced with customer-loading privileges, limited to a maximum of 10 minutes.

Truck deliveries during the business day are made between 9:15 a.m. and 4:30 p.m. On many of the downtown streets parking is prohibited at all times, but on other streets parking is permitted after normal business day for the benefit of persons patronizing theaters, restaurants, and so forth. Sunday regulations are less rigid in order to permit curb parking in the vicinity of downtown churches.

Another way in which the flow of traffic may be expedited is by the more extensive use of mass-transit vehicles — streetcars, buses, subways. Future plans should incorporate the separation of mass-transit vehicles from all other vehicular traffic.

The increase in the volume of private automobiles precludes the possibility of establishing free-moving transit routes through the downtown district. A subway or an elevated structure would provide freedom of movement for the transit vehicles. The use of private right-of-way outside of the Business District would speed up mass transportation and make it more attractive.

Bus operation might supplement rail service in areas where stops would not be located at frequent intervals on rapid-transit lines.

Our downtown district, besides being the smallest of any large city, had another exclusive—17 independently owned bus companies carry local passengers in addition to the streetcars and buses which are operated by the Pittsburgh Railways Company.

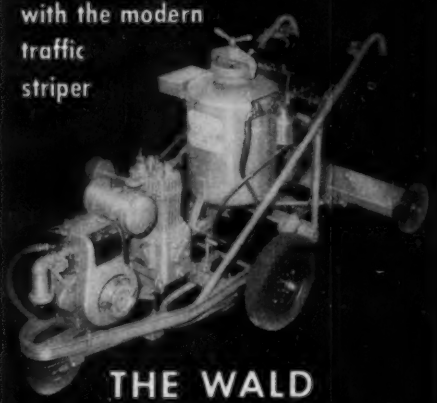
Each company prefers to operate on the few streets where business activity is greatest. Since it is impossible to accommodate all of the mass-transit vehicles on the choicest streets, an attempt is made to separate the routes, thereby avoiding a serious concentration of mass-transit units.

Unification would make it easier to plan convenient routes, since none of the companies offer mutual transfer privileges.

An improved mass-transit system is a necessity in the community, since it offers the most efficient means of bringing people into the heart of the city.

NEW PERFORMANCE
TOP ECONOMY

with the modern traffic striper



THE WALD
REFLECTO LINER
MODEL 12

A punchy, 6 hp, air-cooled engine delivers smooth, sure power to propel machine and operator at speeds of from 3 to 5 mph. Stripe more miles of traffic lines daily with the Model 12.

The sturdy, twin-cylinder compressor has dependable output of 12.5 cubic feet of air at 100 pounds pressure. A 100% air reserve is developed which gives operator quick and sure response to both traction and line application. The air reserve is convenient for hand-gun take-off and other labor saving accessories.

The Wald Nu-Matic spray gun has lateral and vertical adjustments to permit laying of uniform, 2"-6" lines to within inches of curb or wall. Handles plain or reflective materials to lay clean-cut, traffic lines with ease.

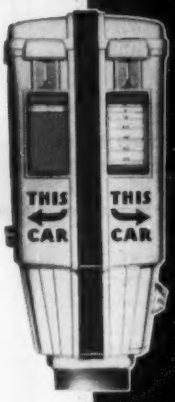
Ample 12 gallon, 150 psi material tank has large 5¾" opening for quick filling, easy cleaning.

Wald builds modern Striping Equipment to meet your every need! Write today for full details on Wald's complete line. Ask for Catalog W10, your Handbook of Striping Equipment.

WALD INDUSTRIES, INC.
HUNTINGDON, PA.

10 reasons for MI-CO's popularity!

1 Top revenue producer
2 Negligible maintenance
3 Quick servicing
4 Simplicity of construction
5 Structural ruggedness
6 Less down time
7 Operates in any climate
8 Long productive life
9 Low first cost
10 Endorsed by city officials, motorists and merchants



The performance records of MI-CO Parking Meters everywhere speak for themselves. All over this country and in several foreign lands it's the same story—MI-COs are giving a good account of themselves and living up to our claims.

MI-CO gives you a choice of two meters . . . the MI-CO Manual, or the original, time-tested MI-CO Twin Automatic. Both are veterans; both have enviable records for dependable operation and consistently high earnings.

If your parking meter plans call for a new installation, adding to your present setup, or replacing obsolete meters, it will certainly be to your advantage to find out what MI-CO has to offer. We'll be glad to send you complete information and operating records of MI-COs in operation everywhere.

MI-CO METERS, 231 Court St., Covington, Kentucky
Division of The Michaels Art Bronze Co., Inc.

MICHAELS PRODUCTS
Store Fronts
Lettering
Check Desks
Lamp Standards
Marquees
Tablets and Signs
Name Plates
Astragals
Railings
Grilles and Wickets
Kick and Push Plates
Push Bars
Thresholds
MI-CO Parking Meters
Museum Trophy Cases
Bronze and Aluminum Doors
Bank Screens and Partitions

Red Police Fords in Dearborn, Mich.

RESIDENTS AND MOTORISTS of Dearborn, Mich., may begin to expect holidays to have some special surprise worked out by their Mayor Orville L. Hubbard. Last April Fool's Day brought a handshake from a police officer instead of a parking ticket. Christmas Day heralded the appearance of 19 new flaming-red Ford police cars. Boldly lettered in white on both sides of each car is the slogan which the Mayor has made standard equipment for all Dearborn policemen: "Be Nice to People."

Mayor Hubbard feels that police cars which can be seen as well as heard, do a better job because they have a deterring effect. Additional new features are Fordomatic drive and a beacon-ray revolving roof siren.

Dearborn police cars are replaced every year as part of the administration policy of keeping all city equipment up-to-date.

Wants Motorists to Use Public Transit

AS IN OTHER CITIES, the number of passengers using our public transportation continues to decline each year, and the transit company is expected to appear before Council shortly for another increase in fare, from the present thirteen cents to fifteen cents. Riders have declined from 53,000 in 1950 to 42,000 in 1953, which parallels the national average.

As you may know, we have no streetcars left in Richmond, Va., nor do we have trolley coaches, the entire public-transportation system being based on gasoline buses. The Transit Company is conducting an advertising campaign to increase transit riding, and fliers are distributed to all large business and industrial plants in the city as well as to the appropriate city department heads. Quite an effort is being made here to discourage the use of downtown business streets by private vehicles.

J. H. Gould
Director of Public Works
Richmond, Va.

What VTC Is Doing

WHENEVER we pick up a trade publication on transportation we notice that everyone is talking about the traffic problem. However, we at Virginia Transit Company, are trying to do something about it.

We are trying to get Richmond merchants interested in joining forces with Virginia Transit Company to help give Richmond congestion-free streets. Other cities have found that widening the streets and increasing parking facilities is not the answer. They only bring more and more cars downtown, making the traffic situation worse than before.

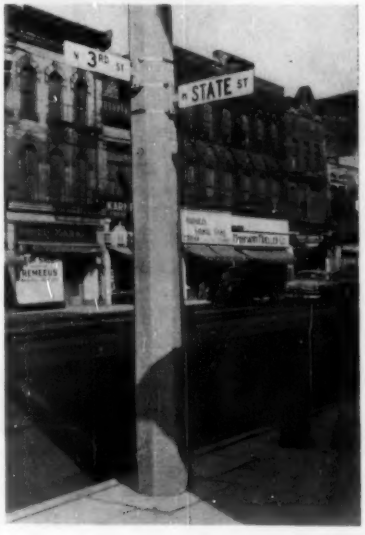
We believe that it is possible to persuade people to make full use of their good city transportation.

Lee F. Davis
Vice-President and Manager
Virgina Transit Company
Richmond, Va.

Part of a "flier" distributed to Richmond businessmen and city officials.

Installing Street Signs In Milwaukee

THE USE OF STEEL STRAPPING to install street signs in Milwaukee is shown in the accompanying photograph. One short length of corrosion-resistant Steelbinder Strap binds street, highway, and traffic signs economically. It is said that a maintenance man can bind a sign to a pole in cold weather without removing his gloves. Although this picture shows the strapping used with concrete poles, it is equally effective on wood and steel. The manufacturer is A. J. Gerrard & Co., of Melrose Park, Ill.



MIGHTY IMPORTANT MONEY to some people

There's something about a DUAL that makes 'em like to park

PEOPLE like meters that *work* . . . easily, smoothly! DUAL's quality manufacture and costlier materials assure that! And the EXTRA pennies of municipal revenue encouraged by DUAL's timing control is something every budget-conscious community official likes too . . . likes *real well!*

Write today for information on SINGLE or DUBL-DUAL Parking Meters—the modern meters with "drop-start" automatic action and selective gearshift time adjustment. Both on-street and off-street types.

For your files . . . extensive, detailed DUAL Data Bulletins are available from: *The Dual Parking Meter Company* (subsidiary of The Union Metal Manufacturing Co.), *Canton 2, Ohio.*

DUAL the Oriqinal... the Friendly PARKING METER

Kansas City Mayor's Program for Urban Traffic Improvement

CITY OFFICIALS faced with a paucity of downtown parking space and burdened with areas of blight are strongly urged to explore the federal-aid urban-redevelopment program as a means of helping to cure parking-space ills and at the same time aiding their city to rid itself of blight.

This was one of several recommendations made by Mayor William E. Kemp of Kansas City, Mo., President of the American Municipal Association, at the Business Men's Conference on Urban Problems sponsored by the Chamber of Commerce of the United States with the cooperation of the Chamber of Commerce of San Diego, Calif., and held in that city, March 4-5.

Mayor Kemp summarized a positive program for urban traffic improvement as follows:

1. Set up within the city government an independent traffic engineering department staffed by specialists in this field. Have this department make an exhaustive study of:

   (a) the most effective use of existing streets, including the pairing of streets for one-way traffic and the greatest possible feasible elimination of curb parking during rush hours and the elimination of left turns.

   (b) The extent of the need for new trafficways, with recommended locations and costs and suggested means of financing. This study should, of course, project these needs for several years in the future.

   (c) The extent of the need, over and above existing facilities, for off-street parking and the location of areas that are, or can be, made available for additional off-street parking.

   (d) Blighted areas that would qualify for federal aid under the federal-state program of land clearance for redevelopment, which might properly include provision for off-street parking.

2. With full factual data furnished by the traffic department, the city government should determine basic traffic policies such as whether or not off-street parking facilities shall be left to action by private enterprise or by the municipality, or by both, and the extent, if at all, to which public controls shall be imposed on parking-rate schedules and other phases of operation.

3. Determine policy with respect to the requirement of a fixed amount of parking facilities in connection with construction of new multiple housing units and buildings designed for public assemblage.

4. Encourage provision of parking facilities by merchant groups to serve the needs of particular business areas.

5. Where permissible, enact legislation to enable business groups to provide parking facilities and pay for them through benefit district assessments.

6. Develop and put into effect an adequate over-all city-wide parking plan and program, contemplating the needs over at least a 10-year period, that will cover both curb parking and off-street parking.

7. Conduct a program of public information calculated to generate wide general approval and support of the plan.

8. Be alert to take advantage of every provision for federal and state aid that may be available for the prosecution of any part of this program.

9. Assist your public transit company to provide better service and cooperate with them.

"I believe," said Mayor Kemp, "that such a program, diligently pursued, will do much toward solving this most vexing problem of traffic congestion in our urban communities."

Women Are Tougher as Traffic Police

WOMEN ARE PROVING to be highly efficient as traffic officers, according to a recent on-the-spot study by Joseph C. Ingraham of *The New York Times*. Southern cities, especially, have been pioneering in the use of women for traffic control, New Orleans calling them traffic guards; Charlotte, N. C., parking checkers; and Richmond, Va., patrolmen. In these cities traffic enforcement has been lifted to a new high level.

The exceptionally heavy concentration of women traffic police in the South during the last few years has been due, in part, to the difficulty of recruiting men. However, the *Times* article points out that female police are used in many other cities across the country, including Seattle, Wash., Evansville, Ind., and Phoenix, Ariz. And in New York, Police Commissioner Francis Adams said he was considering using women to supervise the vast parking-meter program and will use them starting next fall as school-crossing guards.

Sergeant Ray Primm of Richmond says women are "three times as rugged as men" — they don't complain so much about their feet and they hand out more tickets. They vigilantly patrol the city's parking meters, enforce trucking zones, bus zones, and other parking regulations.

Finding that motorists sometimes wipe off the chalk marks used by more trusting male officers, the women have taken to trapping violators by setting windshield wipers off normal position, and by hiding bottle caps atop tires. Richmond's women traffic police work a 48-hour week, draw the same pay as male members of the force—$346 a month, and have the same powers. They carry revolvers and know how to use them.

The parking checkers in Charlotte have produced such striking results that executives from other municipalities are dropping in to study the operation. Since they were first hired three years ago, they have doubled the enforcement record. Their principal value, said Police Captain Lloyd W. Henkel in command of the Charlotte traffic division, is that they won't fall for any "soft talk." The parking checkers do not receive as high salaries as Charlotte's patrolmen, but they have most of the same rights as regular force members.

Strides Toward Orderly Traffic

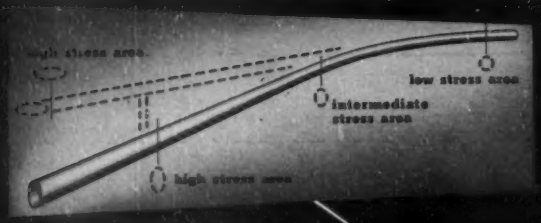
(*Continued from page* 121)

areas have become irrevocably blighted, their customers dispersed, downtown property owners will discover that the "great block," with its interior parking, *was* the answer. I make this proposal, not for cities as large as New York and Philadelphia, but for cities of half a million or under that can still be saved.

This brief treatment of a problem of such complexity is necessarily an over-simplification. It leaves many aspects of the problem untouched. It takes for granted that the reader will see that a large number of modifications of the shape of the "great blocks," to fit varying local conditions, are possible without diminishing the merits of the plan.

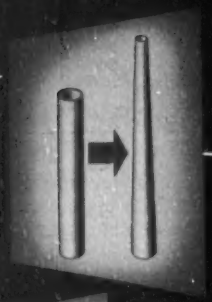
Most city planners have too long given *inadequate attention* to the tough problems presented by our horse-and-buggy cities. These problems can be solved if tackled with a will. Here is an approach. Let's get to work, and keep at it until we solve the problem. For, sooner or later, it *must* be solved.

EDITORIAL NOTE: See also: "A Crisis in Old Shopping Districts," page 159 of this issue.



FIRST to provide ample strength in all-aluminum arms and arm-shaft joints through patented, seamless elliptical arms requiring no bracing for lengths up to 8 feet. On longer arms, one horizontally elliptical member, integrally welded to the arm, eliminates need for side-sway bracing.

FIRST to develop fabricating equipment and methods to permit use of high strength aluminum alloys.



FIRST to develop and produce seamless, tapered shafts from high-strength, extruded tubing in a wide range of diameters.

FIRST to pioneer the Aircomatic method of welding for fast, strong welds and negligible deterioration of alloy strength. All P & K welds are guaranteed . . . all P & K welding personnel and equipment is certified by U. S. Government agencies.

FIRST to stress use of castings of heat-treatable aluminum alloy, and first to introduce permanent mold castings for transformer bases, shoe and pedestal bases . . . with smooth surfaces and strong grain structure.

FIRST to eliminate unnecessary scrolls, tie-rods and other ornamental frills.

FIRST to design and build its own tapering machine to handle all diameters of extruded aluminum tubing.

Seven firsts . . . . . All are P&K

P & K . . . Producer of America's Most Modern All-Aluminum Standards and Brackets FOR LIGHTING TRAFFIC SIGNAL POSTS — TRAFFIC AND COMMERCIAL SIGN POSTS

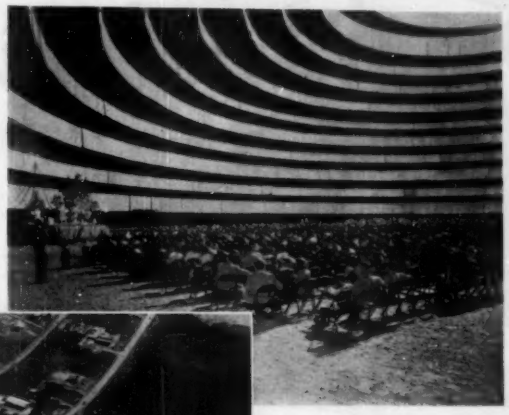
SEVEN P & K FIRSTS! They add up to this: P & K All-Aluminum Standards, Arms and Posts do the job better, easier and at far less cost than any other "pole" of any other material or design.

WRITE FOR THE NEW P & K CATALOG . . . and use the planning and advisory services without obligation.

Pfaff & Kendall

84 Foundry Street
Newark 5, New Jersey

New LeTourneau Semisphere Building



Interior of the semisphere building. Concentric rings of acoustical material have been suspended from the ceiling of the dome for good sound control.

An idea of the relative size of the circular building is given by the nearby highway, parking lot with employees' automobiles, a drive-in movie (upper left), and residences, a short distance to the right.

TWELVE THOUSAND men and women can be seated in a huge new dome-shaped building recently completed at Longview, Texas. There are no interior structural supports in this 85-foot-high, 300-foot-diameter building, and all of the assembly work to create it out of aluminum and steel was accomplished at ground level. The building is said to be adaptable to many functions, including commercial and civic entertainment, indoor sports and athletic facilities, warehousing, heavy equipment display or storage, aircraft hangars, etc.

The structure is called the LeTourneau Semisphere Building, and was built adjacent to the LeTourneau Longview plant and corporation headquarters. It covers 70,686 square feet of floor area and contains 3,289,402 cubic feet of enclosed space. Completely erected, it will sell at less than $4 per square foot of space. Similar buildings can be erected anywhere by shipping the prepared metal parts to the site, including aluminum sheets, curved, embossed, flanged, and drilled. A crew of LeTourneau men supervise erection in approximately 3,000 man-hours with the assistance of locally hired labor.

This dome begins to grow when a sliding steel collar—called the peak structure—is raised gradually by a LeTourneau Electric Winch up a steel corner pole 94 feet high.

Planning Advice Given To Shopping Center Developers

A NEW 35-page report of the American Society of Planning Officials, "Site, Design, Parking, and Zoning for Shopping Centers," discusses factors that developers and communities alike should consider in adopting standards and shopping centers.

A shopper's trip to a center can be divided into four stages, the report says: the road he travels to get to the center, the point where he leaves the road and drives into the center's grounds, his search for a parking space, and his walk to the stores. Developers and communities should pay attention to all four, according to the report, which sets forth the following as some of the aspects to be taken into account.

The most time a customer will spend driving to a shopping center is believed to be 30 minutes. Driving time should be figured according to the condition and congestion of the streets.

Next comes getting the customer off the road and into the center. Again, density of traffic is a controlling factor. If cars are usually lined bumper to bumper, it will be hard for drivers to get into position to turn off. High-speed roads should give ample warning of a turn-off, and entrances to the center should have safety features to lessen the dangers from greater speeds.

When it comes to parking, the shopper wants a space that is easily found and not too far from the stores or cluster of stores where he wants to go. It is regarded as unlikely that a center could have too much parking space. But if that is a worry, a limit on the space allotted can be set by the distance that shoppers have to walk to get from their cars to the stores.

Two Underwater Pipelines

(*Continued from page* 111)

ment was completed after the line had been backfilled and it had an opportunity to stabilize.

We installed butterfly valves, supplied by the Pelton Water Wheel Company, at the points where the submarine crossing connected with the existing pipelines. In a submarine crossing used by large ocean-going vessels, a ship may have to drag anchor in case of trouble, which might be disastrous to the pipelines. For this reason, we selected the butterfly valves instead of the ordinary gate valves because they can be closed readily under a differential pressure of 100 psi.

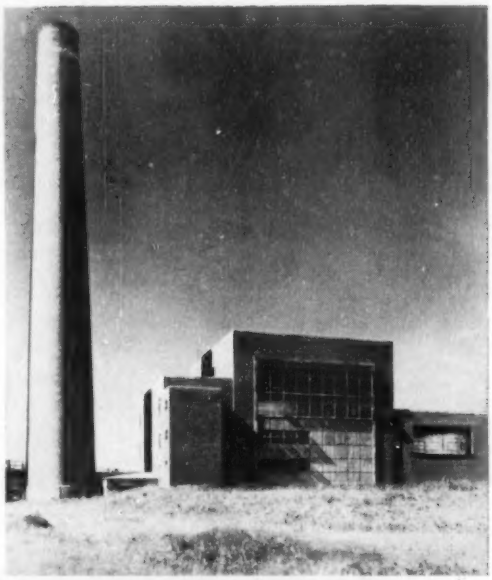
The valves are housed in reinforced-concrete underground chambers that also act as anchors for the pipeline. Blow-off valves are provided on each end of the crossing, but are housed in separate concrete block chambers of standard construction.

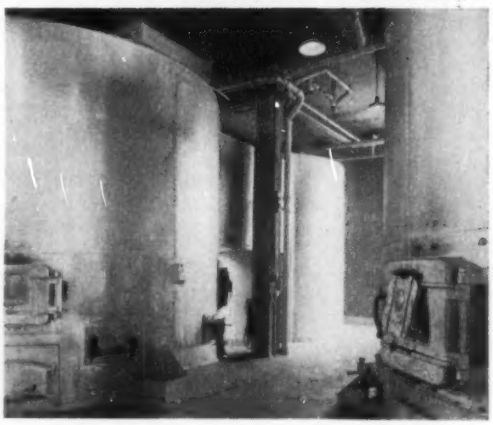
The work of installation started September 8, 1952, and the contract was completed by April 13, 1953. The pipeline went into service March 18 of that year. The entire cost, including valves and fittings, was $139,246. All the design, drafting and field inspection was under the general supervision of the author; Assistant Engineer G. E. Hopkins was in immediate charge.

The Department of Public Utilities is under the direction of a five-man board. Gerrit VanderEnde serves as chairman, and Dean Barline is director.

Why tolerate this

When you can get this?





. . . when you can get a modern, efficient, nuisance-free incinerating *plant* designed by competent consulting engineers with the *incinerator equipment* designed by incineration specialists with more than 60 years experience serving communities in this way.

This, in brief, is what *we* have to offer: (a) thorough knowledge of municipal incineration; (b) plenty of experience in designing and constructing incinerator units; (c) a variety of modern basic types from which to start, including cell and mechanically stoked types; (d) ability to work with consulting and municipal engineers to properly coordinate the Morse Boulger Incinerator designs into their over-all plant designs.

Municipal incinerators are not and should not be 'packaged' plants. Each is designed in detail to meet local conditions, according to each community need.

This is what you get when you deal with Morse Boulger.

Photographs at right show the modern Incineration Plant at Lawrence, Mass.
Architects: Ashton, Huntress & Pratt
Engineers: Metcalf & Eddy,
and, the operating floor of the two Morse Boulger Mechanically Stoked Incinerators; capacity 300 tons/ 24 hour on general municipal refuse.

Write for Literature

MORSE BOULGER DESTRUCTOR CO.

205C EAST 42nd ST., NEW YORK 17, N. Y.

Representatives in Principal Cities

Films for the Municipal Engineer

(*Continued from page* 161)

Castle Films, Division of United World Films, 1445 Park Ave., New York 29, N. Y.

Field Water-Supply Installations
1944. 16mm. Color. 17 min.

Principle and operation of mobile water purification unit and two types of equipment used in field to provide water for soldiers.

Available for purchase ($22.83) from United World Films, 1445 Park Ave., New York 29, N. Y., or on loan from Visual Aids Service, University of Illinois, 210 Union Arcade, Champaign, Ill.

Portable Water-Purification Unit
1942.

Setting up at water point; pump section; filling chemical feed tanks and chlorine feed bags.

Produced for U. S. Army. Available for purchase from United World Films, Inc., 1445 Park Ave., New York 29, N. Y.

Preliminary Field Test of Portable Water Purification Unit Using Diatomite Filter
16mm. Color. Silent. 20 min.

Available on loan from Proportioneers, Inc., 345 Harris Ave., Providence 1, R. I.

Water Conditioning
1944. 16mm. Color. Silent. 25 min.

How total hardness is reduced and iron is removed from a municipal water supply.

Available on loan from Michigan Dept. of Health, Visual Education Service, Lansing 4, Mich.

Life Stream
1947. 16mm. Color. Sound. 30 min.

Kansas City water treatment and softening operations.

Available on loan from Kansas City Water Department, 4th floor, City Hall, Kansas City 6, Mo.

The Accelator
1950. 16mm. Color. Sound. 20 min.

Water softening and clarification.

Available on loan from Infilco, Inc., Box 5033, Tucson, Ariz.

WATER RESOURCES AND CONTROL

Water—Fountain of Life
1950. 16mm. Color. Sound. 25 min.

Depicts the cycle of water, including the origin in oceans, evaporation, transportation, precipitation, and flow back to the ocean.

Available on loan from Byron-Jackson Co., 2300 E. Vernon Ave., Los Angeles 58, Calif.

Water for a Thirsty Land
1949. 16mm. Black and White. Sound. 20 min.

Dependence of man upon supply of water and transformation of desert lands in the Southwest by controlling water supply.

Available for purchase ($100) from Educational Film Dept., United World Films, Inc., 542 S. Dearborn St., Chicago 5, Ill.

Mountain Water
1950. 16mm. Color. Sound. 17 min.

How Western states' industrial, agricultural and domestic use depends on mountain water supply. Illustrates function of mountain vegetation in conserving and regulating water supply.

Produced by U. S. Dept. of Agriculture. Available for purchase ($73.60) from United World Films, Inc., 1445 Park Ave., New York 29, N. Y.; on loan from U. S. Forest Service, Madison Bldg., Milwaukee 3, Wis.

Watersheds and Power
1947. 16mm. Black and White. Silent. 8 min.

How forest preserves contribute to the water supply; how water is stored and transported by means of reservoirs, aqueducts, pumps, etc.

Available for purchase ($12.50) from Filmsets, Inc., 1954 N. Seminary, Chicago, Ill.

The River
1937. 16mm. Black and White. Sound. 31 min.

Famous documentary. What Mississippi has contributed, what we have done to the river, and what control of water power can accomplish.

Produced by U. S. Dept. of Agriculture. Available on loan ($3.00) from Audio-Visual Center, Indiana University, Bloomington, Ind.; or loan (free) from Soil Conservation Service, 434 N. Plankinton Ave., Milwaukee 3, Wis.; for purchase from United World Films, Inc., 1445 Park Ave., New York 29, N. Y.

Valley of the Tennessee
1944. 16mm. Black and White. Sound. 30 min.

How the TVA built dams, put electric power to industrial use, helped in soil reclamation, and taught the farmers of the area scientific farming methods. Famous documentary.

Available for purchase ($35.85) from Castle Films, Inc., 1445 Park Ave., New York 29, N. Y.; and on loan ($2.50) from Bureau of Visual Instruction, University Extension Division, University of Wisconsin, Madison 6, Wis.

Taming a Wild River
1946. 16mm. Color. 24 min.

How Corps of Engineers provided the Missouri River with flood control and navigable channels.

Available on loan from Dept. of the Army, Office of Chief Engineer, Technical Information Division, Pictorial Branch, Washington 25, D. C.

Protecting a Great City
1950. Color. 20 min.

Flood-control work in Kansas City, Mo.

Available on loan from Dept. of the Army, Office of Chief Engineer, Technical Information Division, Pictorial Branch, Washington 25, D. C.

Reclamation in the Arid West
16mm. 10 min.

How dams such as Boulder and Grand Coulee have reclaimed Western deserts; dams; canals; new farms; crops under irrigation.

Available on loan from Dept. of the Interior, Bureau of Reclamation, Washington 25, D. C.

Water in the West
1951. 16mm. Sound. 27 min.

Importance of water in arid West, how men have overcome deserts, droughts, and floods. Role of multiple purpose dams, canals, hydropower facilities. Transformation of West through conservation and use of water resources. Also irrigation, industries, scenery and recreation.

Available on loan from Dept. of the Interior, Bureau of Reclamation, Washington 25, D. C.

Water Resources
1949. Slidefilm. Silent.

Method of flood control by dams and reforestation, also importance of protecting waters from pollution.

Available for purchase from Eye Gate House, 330 W. 42nd St., New York 18, N. Y.

Hoover Dam
1949. 16mm. Black and White. Sound. 33 min.

How Colorado River was dammed to supply irrigation water and electrical power to Southwestern U. S.; relationships between federal government, states, and individuals.

Available on loan from Bureau of Reclamation, Dept. of Interior, Washington 25, D. C.; or for purchase ($45.18) from United World Films, Inc., 1445 Park Ave., New York 29, N. Y.

Water
1948. 16mm. 11 min.

Story of water; potential destructive power when uncontrolled; disadvantages of too much and too little rain; soil and water conservation methods.

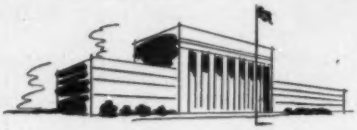
Available for purchase ($13.18) from United World Films, 1445 Park Ave., New York 29, N. Y.; for loan from Soil Conservation Service, Dept. of Agriculture, 434 N. Plankinton Ave., Milwaukee 3, Wis.

River of Gold
1950. 16mm. Color. 32 min.

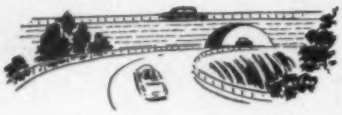
The Pick-Sloan Plan for the development of the Missouri River Basin; Corps of Engineers' program and work for development of navigation, flood control, and hydroelectric power.

Available on loan from Dept. of the Army, Office of Chief Engineer, Technical Information Division, Pictorial Branch, Washington 25, D. C.

THE AMERICAN CITY will be glad to publish information about any other recent films, not included in this listing, which may be of interest to municipal engineers. Address correspondence to **William S. Foster**, Engineering Editor, THE AMERICAN CITY, 470 Fourth Ave., New York 16, N. Y.



$6,750,000,000 of new schools annually for the next 10 years!*



$8,000,000,000 of new highways annually for the next 10 years!*

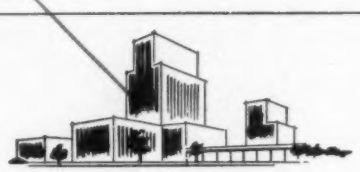
$1,200,000,000 of water and sewerage facilities annually for the next 5 years!*

America's community needs

...they can be met now

The construction industry *now more than ever* has the capacity and experience to build these needed facilities quickly, efficiently and economically.

The general contractor who displays the A. G. C. emblem has the proven Skill, Integrity and Responsibility to execute and coordinate the construction operations.



$1,500,000,000 of new hospitals annually for the next 10 years!*

*Minimum annual community needs as reported to the Congress by the President in his Economic Report, January 28, 1954

The A.G.C. Emblem is your assurance

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA · REG. U.S. PAT. OFF. · SKILL · INTEGRITY · RESPONSIBILITY

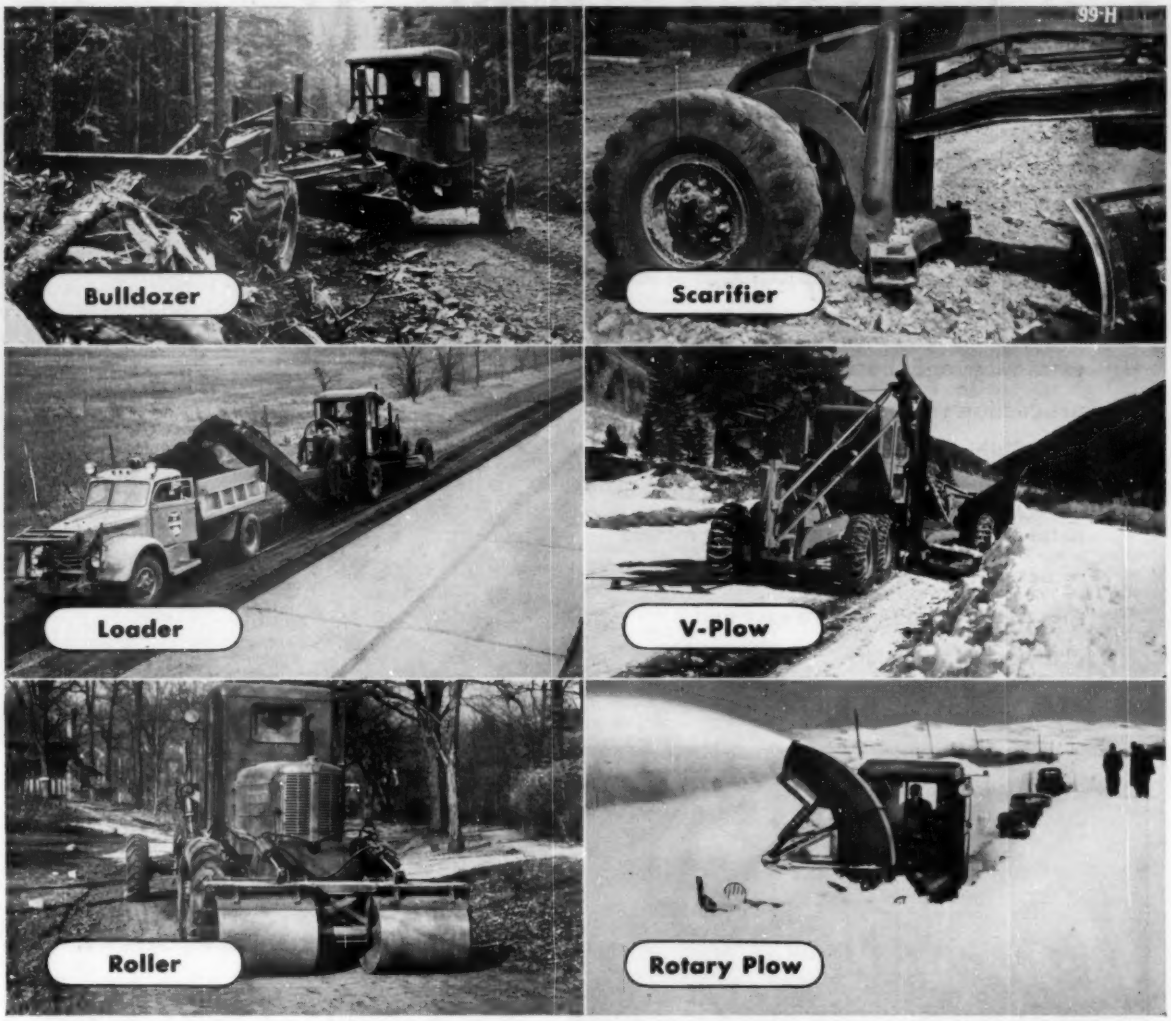
The ASSOCIATED GENERAL CONTRACTORS of AMERICA, Inc.

Representing more than 6,500 of the Nation's Leading General Contracting Firms of Proven Skill, Integrity and Responsibility — Engaged in the Construction of Buildings, Highways, Railroads, Airports, Public Works, Defense Projects

NATIONAL HEADQUARTERS, MUNSEY BUILDING, WASHINGTON 4, D. C.

America Progresses Through Construction . . . Construct by Contract!

Only AUSTIN-WESTERN power graders can handle All these profit-making attachments



Thanks to exclusive All-Wheel Drive and All-Wheel Steer, Austin-Western Power Graders handle front and rear mounted attachments with maximum efficiency on jobs where ordinary graders—handicapped by a "dead" front end and lack of rear steer—would suffer through loss of traction or steering control.

An unrivaled line of attachments is available for Austin-Western graders—versatile tools for those extra jobs which mean extra profits—each attachment designed for a type of work frequently done by a separate machine. No ordinary grader can handle ALL of these attachments... no ordinary grader can use ANY attachment as efficiently. *Without* attachments, the Austin-Western Power Grader works more hours each year than conventional graders... *with attachments*, its uses are multiplied and its value increased beyond that of any other grader.

Austin-Western

Power Graders • Motor Sweepers

Road Rollers • Hydraulic Cranes

Manufactured by

AUSTIN-WESTERN COMPANY

Subsidiary of Baldwin-Lima-Hamilton Corporation

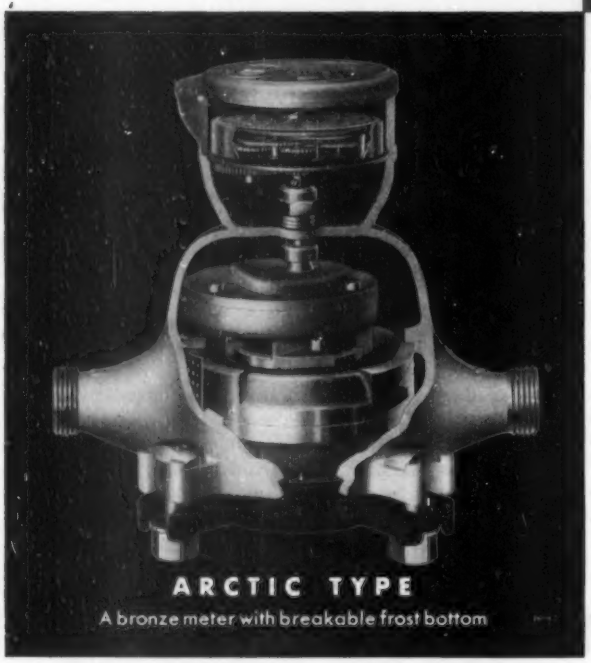
AURORA, ILLINOIS, U.S.A.

Construction Equipment Division

How you benefit from the *STAINLESS STEEL TRIM* in all Rockwell Disc Meters

SURE, stainless steel costs more than brass. But we use it freely* in Rockwell disc meters for the corrosion resistance and durability it alone provides. We can afford to offer this extra value only because of our huge production volume. We built this volume by building a better product. Now we can pass on the benefits to you in the form of even superior performing meters —meters that last longer because of this construction and are easy and economical to repair.

TROPIC TYPE
All-bronze, split case construction



ARCTIC TYPE
A bronze meter with breakable frost bottom

All these Vital Parts Are Made of Stainless Steel:
division plates, driving dogs, disc and stuffing box spindles, screws.

Write for bulletin

ROCKWELL
MANUFACTURING COMPANY

PITTSBURGH 8, PA. Atlanta Boston Chicago
Houston Los Angeles New York N. Kansas City
Philadelphia Pittsburgh San Francisco Seattle Tulsa

In Canada: Peacock Brothers Limited

The Symbol for Service, Quality and Performance in Water Meters

Zoning and Planning Notes

Edited by NORMAN WILLIAMS, Jr.

Exclusion of Residences From Beach-Front Land

CALIFORNIA. *McCarthy* v. *Manhattan Beach*, 264 Pacific (2d) 932 (Supreme Court, December 30, 1953.)

In a remarkable series of recent decisions, culminating in *Clemons* vs. *Los Angeles*,* the California courts have already gone far in removing judicial control over zoning ordinances. This decision is a striking addition to this trend.

The case involved the validity of including a strip of land at the back of the beach in a "beach residential district," where beach recreation and a few accessory structures would be permitted but residences excluded. For some 15 years the City had been negotiating, off and on, to condemn the strip for a park, and there was conflicting evidence on whether residences built there would be safe from flooding. A similar strip nearby, but in an adjacent community, was developed with residences.

In this decision, the Court majority held that the "beach residential district" was a legitimate attempt to provide for an appropriate type of land use within the community, and that the landowner had made no serious attempt to develop his land for a conforming use in this district. The Court thus apparently disagreed with the lower Court's conclusion that the zoning was merely a device to prevent development during the desultory proceedings to buy the land. The Court also held that since the proposed residences might be built upon pilings, the difficulty of policing for immoral acts under such houses could also be taken into consideration in upholding the ordinance. The dissenting judges relied primarily upon the lower court opinion, with the dissenting opinions in general or irrelevant terms, rather than focussing on the extraordinary facts of this case.

* 36 California (2d) 95, 222 Pacific (2d) 439. See discussion in THE AMERICAN CITY for July, 1950, page 129.

Variance to Provide More Housing

MASSACHUSETTS. *Miller* v. *Emergency Housing Commission*, 116 North Eastern (2d) 663 (Supreme Court, December 31, 1953).

This is the third Massachusetts Supreme Court decision in a long legal controversy over a proposed apartment building on a lot located mostly in Boston but partly in Brookline.*

In 1946, the Massachusetts Legislature passed a rather extraordinary statute. A State Commission was established which, in order to alleviate the housing shortage, was authorized to grant variances for housing on "suitable sites for . . . dwelling places which cannot lawfully be used for such purpose . . . because of the zoning ordinances and by-laws and building codes" —provided that the spirit of the zoning laws must be observed. After the Boston Board of Appeals refused a variance, the Commission granted one for the proposed apartment building to be located on the part of the lot in Boston—with an extra half-story of height, somewhat higher coverage and smaller yards, and much higher density than permitted in the district. (It should perhaps be noted that the Boston zoning law is also a state statute.)

The Massachusetts court here held that while the variance on other regulations would clearly not defeat the intent of the zoning law, the differences in density—14 times as high as permitted—presented a more difficult question. However, it was held that this was justified because there were a number of other apartment houses in the vicinity. The subsequent repeal of the statute for State-granted variances was held not to affect the rights created under it.

* See *Brookline* v. *Co-Ray Realty Co.*,326 Massachusetts 206, 93 North Eastern (2d) 581, and *Co-Ray Realty Co.* v. *Boston*, 328 Massachusetts 103, 101 North Eastern (2d) 888, and discussion in THE AMERICAN CITY for January 1951, page 139 and February 1952, page 165.

Extension of Non-Conforming Use

NEW JERSEY. *Borough of Rockleigh* v. *Astral Industries*, 102 Atlantic (2d) 84 (Appellate Division, December 24, 1953).

A nonconforming industrial plant, manufacturing small refrigerators, was located in a residence district in a small borough, 1 mile square, with only 25 homes and only two other nonresidential buildings. The local government had a settled policy against bringing water mains into the Borough, specifically in order to keep the community small and untouched and so to avoid "development.' The factory management knew about this policy before moving in, but obtained a building permit and proceeded to spend some $85,000 to build a tall 250-000-gallon water tank for fire protection. The Borough brought an action to have the tower demolished, on the ground that it represented an unlawful extension of a nonconforming use.

In holding that the tank was in fact an unlawful extension, the Court ignored an argument that no additional manufacturing capacity was involved. The opinion also held that no violation had been shown of a restriction on machinery to 5 horsepower.

Churches in Residence Districts—Set-Back and Off-Street Parking Requirements

INDIANA. *Board of Zoning Appeals of Decatur* v. *Decatur, Indiana, Co. of Jehovah's Witnesses*, 117 North Eastern (2d) 115 (Supreme Court, February 1, 1954).

In this case, a small Jehovah's Witnesses church was proposed, to cover about 28% of a small corner lot (66 by 108 feet), with a 14-foot front yard instead of the required 18½ feet, and room for 8 off-street parking spaces instead of the required 25. When a variance was refused, the church brought an action to have those zoning regulations invalidated on the ground of interference with religious freedom.

In the opinion, the required extra 4½ feet of front yard was first upheld as not unreasonable. However, by a 3 to 2 majority, the requirement for added parking space was invalidated, primarily on the ground that the guarantee of religious fredom was more important—and, in effect, that it was improper to impose any requirements which might result in excluding churches from residence districts. The opinion stressed the unlikelihood of a traffic hazard being created by the lack of the additional parking spaces.

In a vigorous dissent, two judges emphasized several obvious points in rebuttal —the need to take drastic steps to prevent further congestion of the street, the fact that churches must conform to other regulations such as building codes, etc. Moreover, the dissent also pointed out that in some States the courts have held that churches may be completely excluded from residential districts, and the United States Supreme Court has in effect approved this.

The confusion in the two opinions arose partly from the emphasis upon traffic safety instead of traffic congestion. However, on the merits, a decision like this is of considerable significance. Some state courts have held that churches cannot be excluded from residence districts,* others have upheld such exclusion.** Obviously, it is often desirable for a church to have a residential environment. A reasonable compromise is to permit churches in residence districts subject to special spacing regulations to prevent overshadowing nearby homes, and special parking requirements to prevent cluttering up residential streets with parked cars. The effect of decisions such as this is to prevent such a compromise solution.

* See for example *Mooney* v. *Orchard Lake*, 333 Michigan 389, 53 North Western (2d) 308 (1952); *North Shore Unitarian Society* v. *Plandome*, 200 New York Miscellaneous 524, 109 New York Supplement (2d) 803 (1951).

** See *Corporation of Presiding Bishop of Church of Jesus Christ of Latter Day Saints* v. *Porterville*, 90 California Appeal (2d) 656, 203 Pacific (2d) 823 (1949), appeal dismissed, 338 U. S. 805 (1949).

Public Utilities Exempt from Zoning

OHIO. *Motor Cargo, Inc.* v. *Board of Township Trustees of Richfield Township*, 117 North Eastern (2d) 224 (Court of Common Pleas, September 9, 1953).

The Ohio zoning enabling act provides that "any public utility" shall be exempt from zoning. In this case, an Ohio trial court held that the phrase "any public utility" was broad enough to include an interstate trucking company. It appeared that Motor Cargo, Inc. was considered a "public utility" under the Public Utility Commission's jurisdiction and the sales tax law, but not under the gross income tax law.

If this decision should be upheld, and the statute not amended, the result would be that a motor trucking terminal—probably the most extreme example of a heavy traffic-generating use—could be placed in a residence district any place in Ohio.

CITY GOVERNMENTS ACROSS THE WORLD!

RECOGNIZE ROTO-PAC's FASTER, MORE EFFICIENT MORE ECONOMICAL PERFORMANCE

THEY BUY ROTO-PAC

N. Y. C. HAS ADDED 370 NEW ROTO-PACS TO ITS ALREADY LARGE ROTO-PAC FLEET

CALENDAR
of the
BOARD OF ESTIMATE
of the City of New York

May 14, 1953

180

The Department of Sanitation in support of its preference for the escalator compactor body cites the following among its reasons:

1. Universal use of the unit on all types of collection service at maximum efficiency. Unit can be assigned to any collection route whether on straight ashes, garbage or mixed refuse. This flexibility of assignment is especially important in the light of the extension of the incinerator program and the separation of ashes.

2. Due to a smaller hopper opening there is less spillage both on the part of the loaders and as a result of winds. Likewise the operation is more sanitary since the loaders are not exposed to the refuse and odors as is the case on a batch-type large hopper.

3. Batch-type unit is a single purpose truck for mixed material and not fully satisfactory for straight collection of ashes.

4. As a continuous loader, the escalator compactor unit daily payload performance is greater than the batch-type unit.

5. During a comparable nine month period of the term of the manufacturer's guarantee on the latest delivery of 210 escalator-type and 140 batch-type units the average percentage of lost days due to repairs to days assigned to district garages in the case of the escalator-unit equalled only 1.6% while for the batch-type the average percentage was 19.5%.

6. The Consulting Engineers employed by the Mayor's Committee on Management Survey to study the operations of the Department of Sanitation recommended that the escalator-compactor type collection truck become the standard collection unit for future purchases.

7. It is the Department of Sanitation's intention to standardise its refuse collection truck fleet on the escalator type...

FOR FURTHER INFORMATION OR A DEMONSTRATION WRITE

There is nothing faster or more efficient in refuse loading than automatic, continuous loading and packing

There is nothing faster or more efficient than ROTO-PAC

CITY TANK CORP.

53-09 97th PLACE
CORONA, LONG ISLAND, N. Y.

Modern Water Rates

(*Continued from page* 163)

ings occupied by the water users, unless the buildings are more than 75 feet from the water main. In such cases, the meters are placed in boxes at the lot line. Water Department owns all meters.

6. Bills are prepared on a National Cash Register automatic billing machine.

L. C. HUFFMAN
Director of Water

RIDGEWOOD, N. J.

Rates Per Month

Size of Meter (in inches)	*Fixed Charges*
⅝	$ .50
¾	.667
1	.83
1¼	1.00
1½	1.16
2	1.33

Volume of Water (in gallons)	*Metered Charges* (per 1,000 gallons)
First 100,000	$ .30
Next 100,000	.25
" 100,000	.20
Over 300,000	.15

Miscellaneous Regulations

1. Public and private fire hydrants and fire service for sprinklers are rated at $40 per year. The use of hydrants is banned for any purpose but fire protection.

2. Restrictions are made in lawn sprinkling, which is allowed only every other day in districts.

3. Recirculation is required for air conditioning units of 3-ton capacity or more.

General Data

Population served	46,800
Services (100% metered)	12,750
Hydrants	1,017
Valves	1,751
Miles of mains	179
Supply—wells	
Treatment—chlorination	
Storage facilities—	150,000-gallon elevated tank 2,000,000-gallon covered reservoir
Plant capacity	5.5 mgd
Average demand	2.75 mgd

Customer's Costs Per Month

Gallons	*Cubic Feet*	*Costs*
3,000	400	$1.40
5,000	667	2.00
10,000	1,333	3.50

Remarks

1. These rates have been in effect since 1921.

2. No water is provided without charge to anyone, not even the municipality.

3. No water funds are diverted to other municipal uses, or provided without charge to anyone.

4. Meters are removed and checked once every five years. They are owned by the department and located in the building occupied by the user.

5. Bills are rendered through the use of a Burroughs billing machine.

HAROLD FLORENCE, *Superintendent*
JOHN F. MULLER *Office Supervisor*

A Crisis in Old Shopping Districts

(*Continued from page* 159)

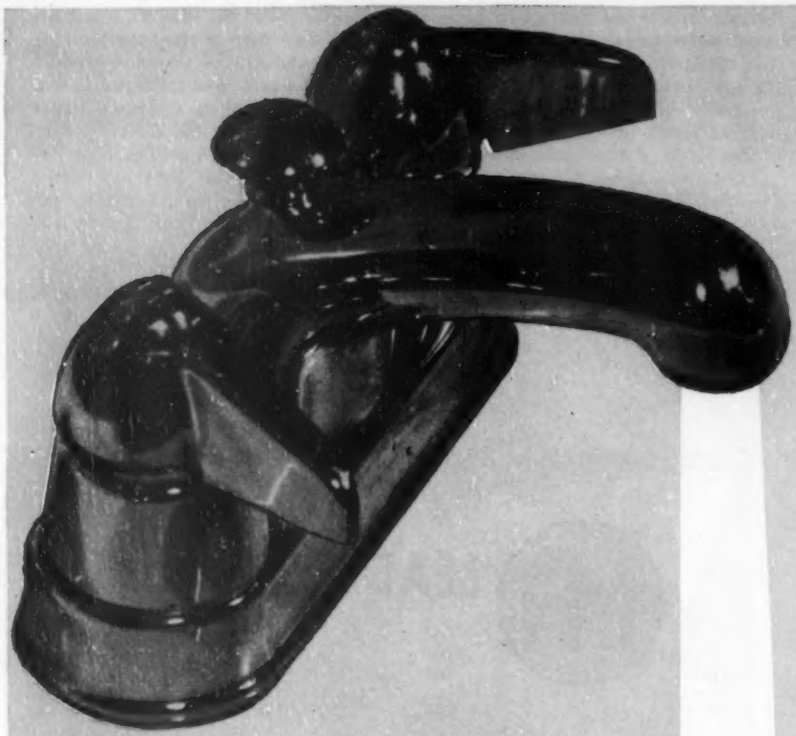
municipal apathy. In other districts there is little doubt that eventually all of these objectives can be obtained in varying degree. Concerted action will be needed by the multiple interests in the old district to form a local organization especially adapted for this purpose. Such an organization is essential to initiation of a program of conservation and rehabilitation.

The type of organization required to initiate a broad program, bearing in mind that rehabilitation and conservation must necessarily be more than a palliative, must in practically all instances be well-financed and staffed along business venture lines.

A first step in such a conservation program is a competent study to determine the economic necessity for preservation of the district, a market analysis to help arrive at space requirements and to evaluate the future of the area, and an architectural analysis to point up the possibilities of achieving physical unity, attractiveness, and pleasantness.

Such analyses will show very often that programs of rejuvenation can be reasonable and well within the economic capabilities of any normally strong community, and that older shopping districts need not be junked and the community subjected to a type of blight that, once developed, is almost impossible to eradicate.

MH LEADERSHIP
BUILT ON QUALITY SERVICE PRESTIGE
Our manufacturing plant is one of the most modern and best equipped of its kind in the United States, combining quality control with mass production of a complete line of M & H valves, hydrants and accessories.
M & H products have long enjoyed national recognition by engineers and water works management for simplicity of design and superior quality of materials and workmanship. The national prestige of M & H products is founded on two things: (1) some 30 years of experience in engineering, design and shop practice in valve and hydrant manufacturing, plus (2) the service record of M & H products for many years under practical operating conditions in all sections of the country. For details, write or wire M & H VALVE AND FITTINGS COMPANY, ANNISTON, ALABAMA.
M&H PRODUCTS
FOR WATER WORKS • FILTER PLANTS INDUSTRY • SEWAGE DISPOSAL AND FIRE PROTECTION



Mrs. America may never know the difference....

But those entrusted with the responsibility to supply the homes and industries of their communities with good water . . . at low cost, know that the Roberts nameplate on water purification equipment means complete dependability . . . through the years.

MECHANICAL EQUIPMENT
BY
ROBERTS FILTER MFG. CO.
DARBY, PENNA.

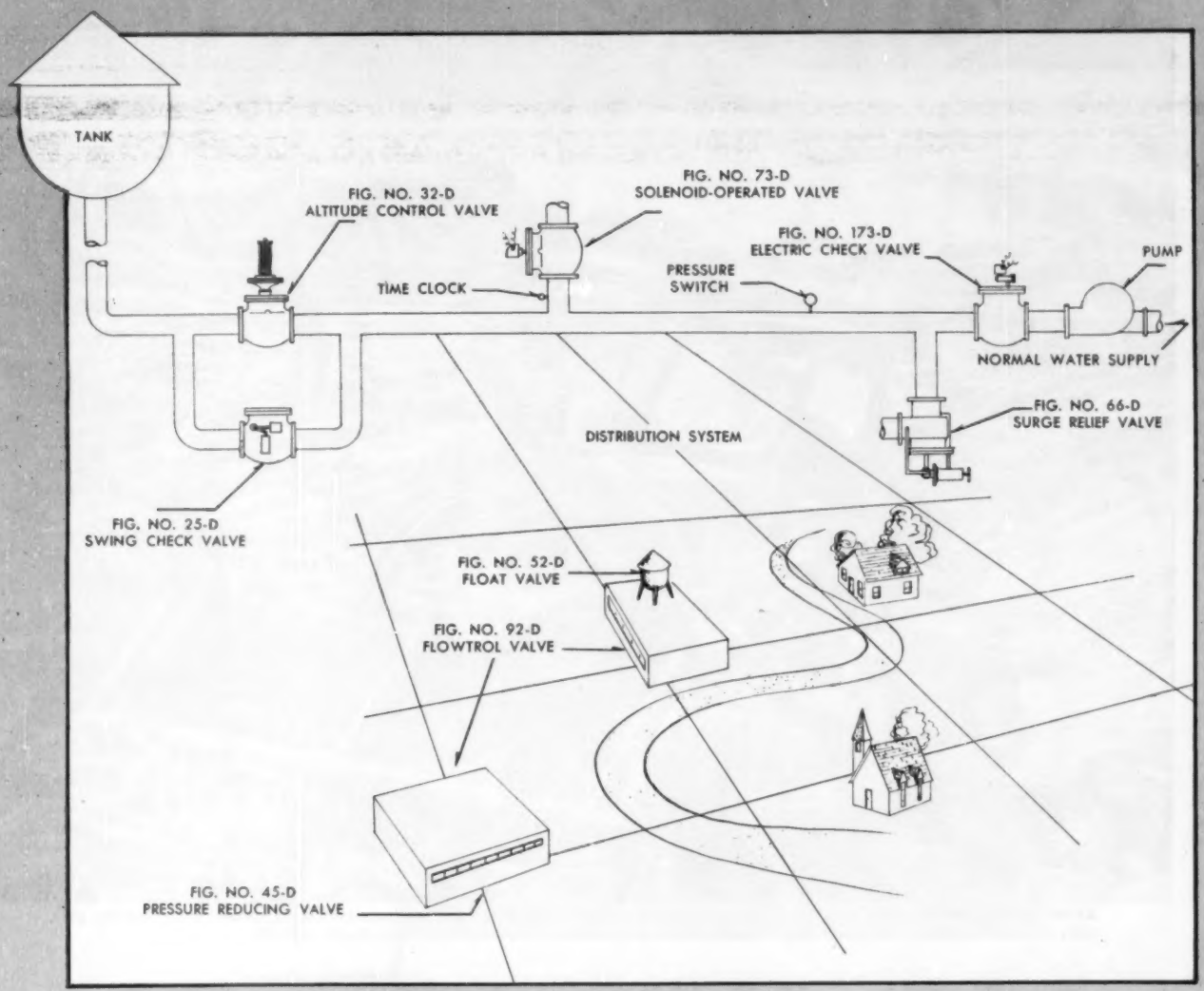
ROBERTS FILTER Manufacturing Co. • Darby, Pa.

Golden-Anderson CUSHIONED VALVES

are Especially Designed for

MUNICIPAL WATER WORKS SYSTEMS

To give long dependable service with low maintenance



Our complete technical catalog is available on request—write for it today!

GOLDEN ANDERSON *Valve Specialty Company*

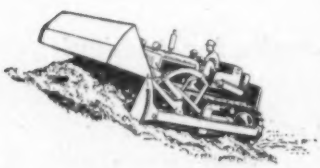
1200 RIDGE AVENUE, PITTSBURGH 33, PA.

designers and manufacturers of:

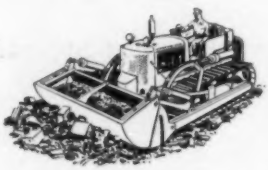
Non-Return Valves • Altitude Valves
Solenoid Valves • Engine Stop Valves
Swing Check Valves • Float Valves
Pressure Reducing Valves
Surge Relief Valves for air, gas, steam and water

Solves Refuse-Disposal

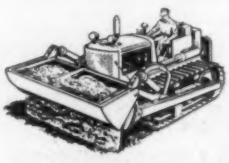
AFTER REFUSE IS SPREAD and compacted by the INTERNATIONAL-DROTT unit, the "one man sanitation squad" will cover the area with a layer of earth, converting rocky, worthless land into valuable commercial or agricultural property.



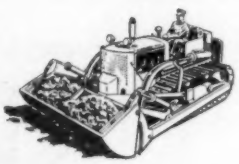
1. Prepares the site



2. Crushes and compacts refuse

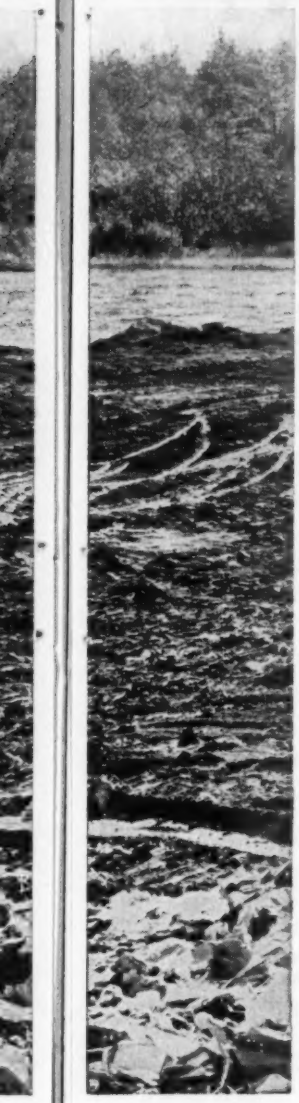


3. Transports and spreads earth cover



4. Grades and levels finished area

Problem for Waterville



Bullclam Shovel Method of Sanitary Fill Provides Answer to Refuse Disposal Question at Waterville, Maine

The odor of burning garbage from the open dump is gone forever, much to the satisfaction of the citizens of Waterville, Maine.

Recently, the city bought an INTERNATIONAL TD-14A crawler tractor equipped with a DROTT BULLCLAM shovel.

Closing the old city dump, Waterville started the Bullclam Shovel Method of Sanitary Fill for garbage disposal at a run-down farm that had been purchased by the city. As refuse is dumped, it is spread and compacted by the INTERNATIONAL-DROTT unit. At the close of each day, the "one man sanitation squad" covers the refuse with a layer of earth. No odor, no rats, no flies, no windblown waste.

Now, according to Dr. Arthur Daviau, City Health Officer, "Instead of burning rubbish with no return, we're profiting by using it to reclaim otherwise worthless land."

And when fill operations are completed at the farm site, Waterville city officials are talking about using the INTERNATIONAL-DROTT BULLCLAM Shovel Method of Sanitary Fill to turn an abandoned gravel pit into a playground.

Ask your INTERNATIONAL Industrial distributor for details on the INTERNATIONAL-DROTT BULLCLAM Shovel Method of garbage disposal.

Or write to:

DROTT MANUFACTURING COMPANY, MILWAUKEE 8, WISCONSIN
INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

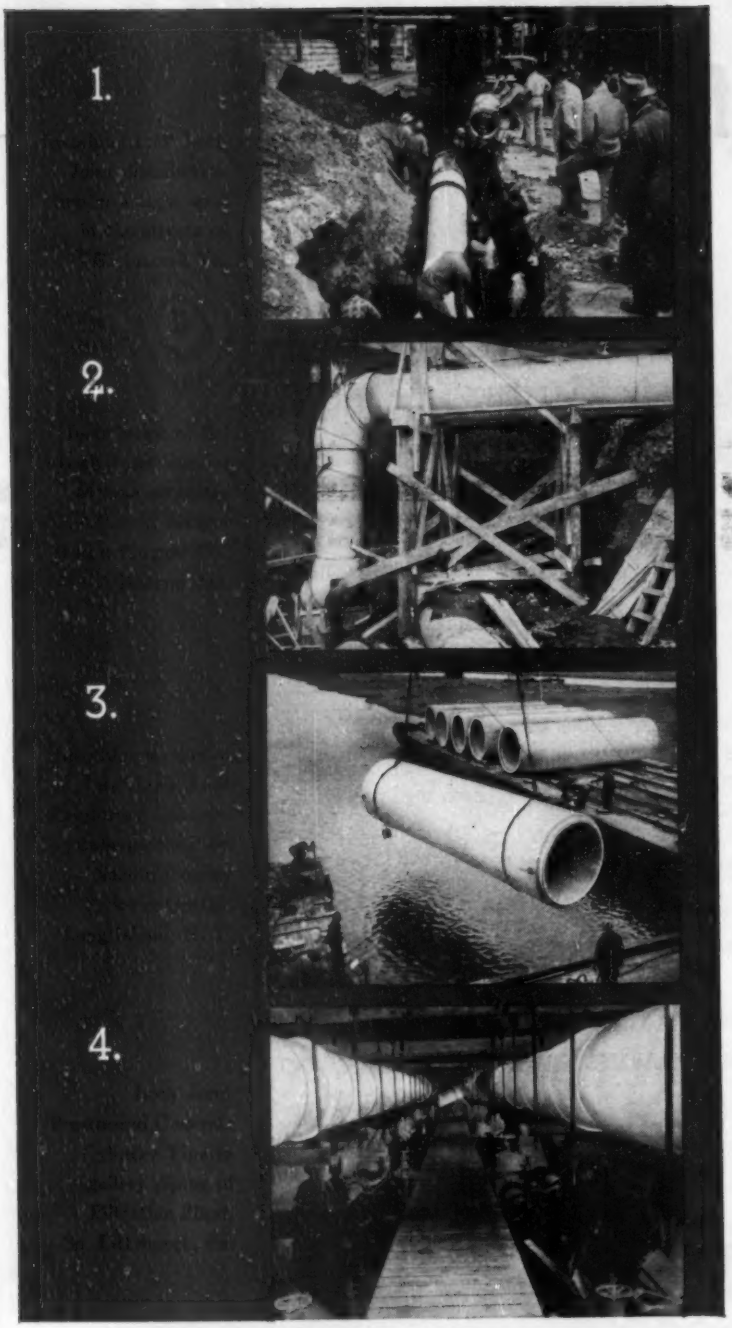
BULLCLAM BY

DROTT

POWER BY

INTERNATIONAL

POWER THAT PAYS



LOCK JOINT

the multi-purpose pressure pipe

Lock Joint Concrete Pressure Pipe has long been recognized as the ideal, high capacity pipe for water supply lines, but its variety of types and designs has also permitted successful use in the following:

- WATER DISTRIBUTON SYSTEMS
- INDUSTRIAL PLANT INSTALLATIONS (Supply, circulating and cooling systems)
- SUBAQUEOUS INSTALLATIONS (Water intakes, siphons and sewer outfalls)
- WATER WORKS PLANTS (Pumping and treatment plant piping)
- SEWAGE OPERATIONS (Force mains and plant piping)

THESE are some of the major services for which Lock Joint Concrete Pressure Pipe is ideally suited. So, if your pressure pipe problem involves pipe 16" in diameter or larger, call on Lock Joint – the low cost, high capacity, long lasting multi-purpose pipe.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains 16" in diameter or larger, as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT PIPE COMPANY

Established 1905

P. O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich., Columbia, S. C.

SEWER & CULVERT PIPE PLANTS:

Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. • Kansas City, Mo. • Kennett Square, Pa. Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. • Kenilworth, N. J. Hartford, Conn. • North Haven, Conn. • Tucumcari, N. Mex. • Oklahoma City, Okla. • Tulsa, Okla. • Beloit, Wis. • Henrietta, N. Y. • Hato Rey, P. R. • Ponce, P. R. • Caracas, Venezuela

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Assessment Liens—Power of City to Sell and Assign to Third Party for Collection

In mandamus to compel city collector to accept sum of money in satisfaction of special assessment on plaintiff's property wherein city defended on grounds that special assessment judgment liens had been sold and assigned to others, held that statute authorizing sale and assignment of such liens was not unconstitutional on ground that it permitted persons other than duly authorized public officials to collect taxes. *People ex. rel. Drobnick* v. *City of Waukegan*, 116 N. W. (2d) 365 (Ill., Nov. 18, 1953) *Reh. den.* Jan. 18, 1954.

Beer—Prohibiting Sale Within 5,000 Feet of School or Church Valid

In action to have declared unconstitutional ordinance prohibiting sale of beer within 5,000 feet of any school or church, held that under statute permitting municipalities to control and restrict sale of beer, ordinance was constitutional even though it in effect prohibited sale of beer in entire town. *Rule* v. *Town of Etowah*, 263 S. W. (2d) 498 (Tenn., Dec., 11, 1953).

City Hall — Dedication of Room to Use of Veterans Groups Exclusively —Resolution Revocable

In action by veterans organization against city to enjoin interference with their use of memorial hall located in city hall building as meeting place for veterans organizations, and for declaratory judgment as to revocability of city resolution dedicating hall and restricting its use to meetings for said organizations, held that resolution was revocable since dedication restricting use exclusively to veterans organizations did not constitute use by public at large and was therefore not public use. *Central Veterans' Ass'n. of Stamford* v. *City of Stamford*, 101 Atl. (2d) 281 (Conn., Dec. 1, 1953).

Contracts—Street Lighting—Contingency Clause Relating to Federal Regulations Valid

In action to determine whether contractor's street-improvement contract with city was valid, held that contract was valid since clause which provided for suspension, termination, or renegotiation of contract in case improvement work was stopped pursuant to federal regulations did not impose illegal burden on property owners in assessment district. *Mathes* v. *City of Long Beach*, 263 Pac. (2d) 472 (Cal. App., Nov. 24, 1953).

Contracts—Swimming Pool—Letting To Other Than Low Bidder Upheld

Where city council accepted bid of one not lowest bidder for construction of municipal swimming pool, held that lowest bidder does not have such absolute right as to entitle him to certiorari to compel letting of contract to him, and that statutory provision requiring contract in such cases to be let to lowest bidder is designed for benefit and protection of public and not of bidders. *State ex. rel. Hron Bros. Co., Inc.*, v. *City of Port Washington*, 62 N. W. (2d) 2 (Wis., Dec. 30, 1953).

Fire Truck—Injury at Intersection—City Not Liable

In action against city for injuries sustained in intersectional collision between automobile and fire truck answering fire call, held that allegation that operation of signal lights without master switch to give notice of use of street as fire lane was allegation of negligence, if any, in performance by city of governmental function, for which city was not liable. *Presley* v. *City of Odessa*, 263 S. W. (2d) 293 (Tex. Civ. App., May 28, 1952) *Reh. den.* June 18, 1952.

Fireworks—Ordinance Prohibiting Use, Sale, or Storage Within City Valid

In action to enjoin city from enforcing city code provisions prohibiting use, sale, and storage of fireworks with city, held that ordinance was valid exercise of city's police power. *Cannon* v. *City of Dallas*, 263 S. W. (2d) 288 (Tex. Civ. App., Dec. 2, 1953) *Reh. den.* Dec. 30, 1953.

Gambling—Slot Machines, Punch Boards, Prize Games—Statute Authorizing Invalid

In action by county citizens to enjoin operation of slot machines, punch boards, chance spindles, and chance prize games licensed by state, held that such activities would be enjoined since statutes authorizing them violated constitutional provision prohibiting lotteries or gift enterprise under any pretense or for any purpose whatever. *State ex. rel. Anderson* v. *Village of Garden City*, 265 Pac. (2d) 328 (Idaho, Dec. 23, 1953).

Garbage—Damages from City for Hauling Away Tools with Rubbish Denied

In action against city for conversion of tools and materials which had been placed next to regular rubbish containers and which were taken away and dumped by city employees, held that there could be no recovery for conversion, since the taking was not willful, and no recovery for negligence, since operation of rubbish department is a governmental function. *Bademan* v. *City of Cleveland*, 116 N. E. (2d) 13 (Ohio App., Mar. 3, 1952).

Parking—Statutes Prohibiting on City Street Which is Part of State Highway Constitutional

In action by abutting property owners to enjoin state authorities from prohibiting parking of vehicles on City of East Lansing street fronting plaintiff's places of business, which constitutes urban portion of trunk line highway, held that statutes authorizing prohibition of parking on trunk line highway, even though it includes city street, were constitutional, since by establishment of trunk line highway the state assumed obligation to people of state in general to see that street in question was maintained and controlled so as to be reasonably available for flow of traffic. *Allen et al.* v. *Ziegler et al.*, 61 N. W. (2d) 625 (Mich., Dec. 29, 1953).

Policeman—Injury to Person While Aiding Officer—City Liable

In action against city by private detective who was injured when called by policeman to assist in apprehending persons responsible for assault, held that request for assistance, made after dispersement of group of youths who lurked around and threw objects at officer, did not constitute call to aid in suppressing riot, but that request brought case under statute providing for cause of action against city for injury sustained when aiding officer in arresting a person. *Riker* v. *City of New York*, 126 N. Y. S. (2d) 229 (N. Y. Sup. Ct., N. Y. Cty., Nov. 24, 1953).

Recreational Facilities—Injuries in Coasting Area—City Not Liable

In action against Provo City for injuries to minor sustained while coasting in area which was university property but which was controlled by city, held that city was performing governmental function in providing recreational facilities in controlling roadway and designating it as coasting area. *Davis* v. *Provo City Corp.*, 265 Pac. (2d) 415 (Utah, Dec. 31, 1953).

Sewer Service Charges—Township Charges Against County Buildings Upheld

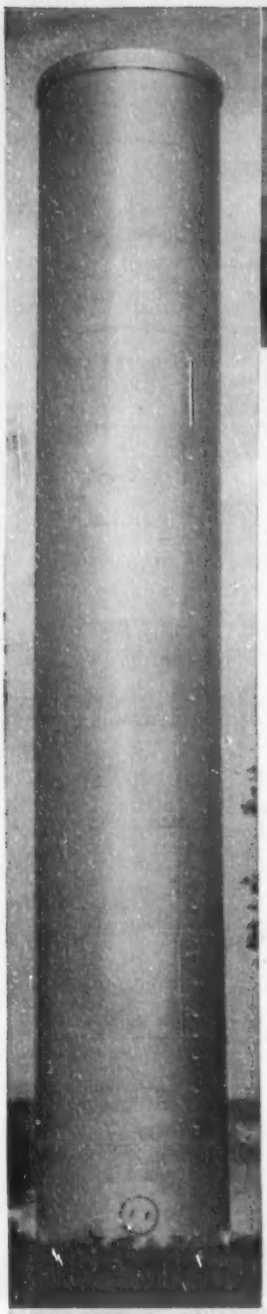
Where entire cost of sewage-disposal system was paid by township taxpayers, and township created sewerage authority as agency of township and conveyed system to said authority, held that imposing sewer-service charges on county institutions which are located in township and are for use, benefit, and service of not only entire county but municipalities outside of county, while exempting public buildings of township, was not unlawful discrimination nor an abuse of discretion by sewerage authority. *Camden County* v. *Pennsauken Sewerage Authority*, 101 Atl. (2d) 361 (N. J. Super. Ct. App. Div., Dec. 15, 1953).

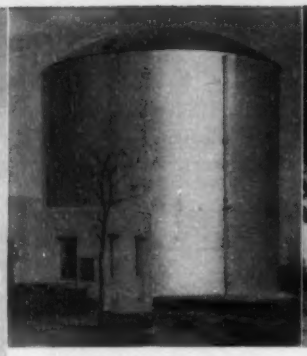
Slum Clearance—Act Authorizing Condemnation and Sale to Private Enterprise Valid

In condemnation proceedings by housing authority to acquire land for slum clearance and redevelopment program, held that Act was constitutional even though it authorized local authority to make part of land thus acquired available to private enterprise for redevelopment. *Hunter* v. *Norfolk Redevelopment & Housing Authority*, 78 S. E. (2d) 893 (Va., Nov 30, 1953).

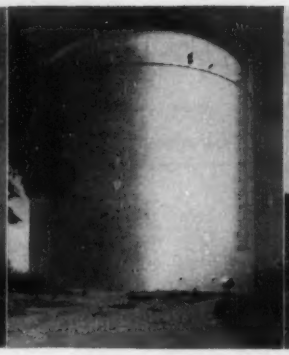
Street Lights—City's Use of Gasoline Tax for Upheld

In action to enjoin city from using revenues obtained from city gasoline and motor fuel tax to pay for electric current for street lighting, held that street lighting was improvement within city ordinance providing for expenditure of revenues from gasoline and motor fuel tax for purpose of street maintenance, improvement, opening and widening only. *Wiggs* v. *City of Albuquerque*, 263 Pac. (2d) 963 (N. M., Dec. 2, 1953).

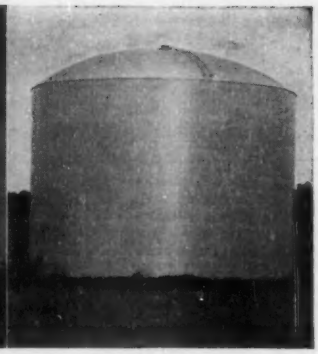




500,000 gal. dome roof Water Storage Tank. 45′ dia. x 42′ high.



2 million gal. elipsoidal roof Water Storage Tank. 70′ dia. x 84′ 4″ high overall.



750,000 gal. dome roof Water Storage Tank. 56′ dia. x 40′ 9″ high.

GRAVER

STEEL WATER TANKS

Graver has full facilities for engineering, fabrication and field erection of water reservoirs and standpipes of all capacities. These designs meet pertinent codes and Underwriters' standards.

Graver's latest facilities are two new western plants—at Fontana, California and Casper, Wyoming. In addition to these centers for field-erected tanks, standpipes and other steel plate structures are two new Graver Sales Offices:

420 MARKET ST.
SAN FRANCISCO 11

1250 WILSHIRE BLVD.
LOS ANGELES 17

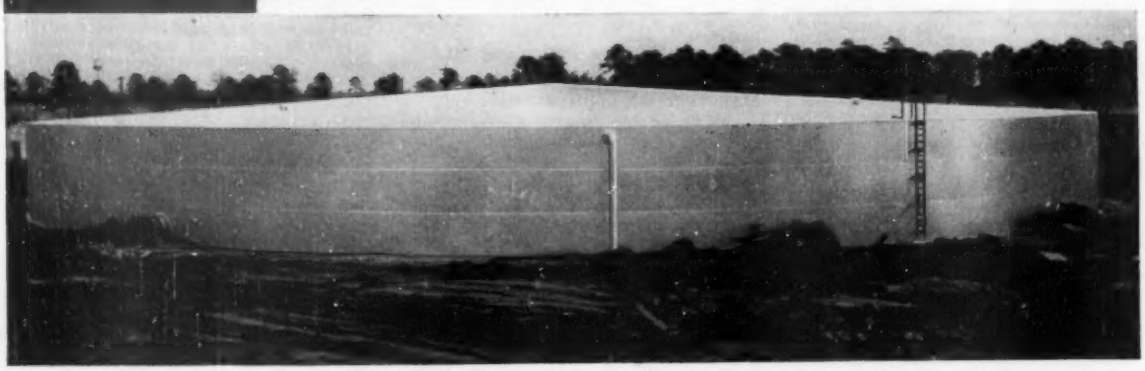
GRAVER TANK & MFG. CO., INC.

EAST CHICAGO, INDIANA

New York • Chicago • Philadelphia • Atlanta • Detroit • Cleveland
Pittsburgh • Houston • Catasauqua, Pa. • Sand Springs, Okla.
Casper, Wyo. • Odessa, Texas • Los Angeles
Edge Moor, Del. • Tulsa • Fontana, Calif.
San Francisco

100,000 gal. Water Standpipe. 14′ dia x 90′ high.

5 million gal. cone roof Water Storage Tank. 218′ dia. x 18′ high.



Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*

Earl P. Sandquist
Aurora, Colo.

Julian H. Orr
Portland, Maine

Ralph H. Winton
San Antonio, Texas

C. C. Burnett
Albany, Ga.

David A. Harner
Jacksonville, Texas

A. L. ATKINSON, formerly an engineer for the State Highway Dept., was appointed city manager of Greenwood, S. C., succeeding R. E. Froneberger.

White River Junction, Vt., has appointed ROLAND F. BURKE, former manager of The Hartford Water Company, to succeed Almon C. Davis as city manager.

HAROLD R. CHEEK, former manager of Niagara Falls, N. Y., succeeds R. M. Hoisington as city manager of Springfield, Ohio.

The first manager of Morehead, Ky., is JAMES E. CLAY, formerly an attorney.

Sweet Home, Ore., has appointed ROY EAMES, former assistant city manager, to succeed Jess M. Parker as city manager.

HAROLD B. GILBERT was appointed first manager of Orrington, Maine.

DONALD S. HARDING left the managership of Oakmont, Pa., to become the first manager of St. Marys, Pa.

Cincinnati, Ohio, has appointed C. A. HARRELL, one-time manager of San Antonio, Texas, to succeed W. R. Kellogg as city manager.

Succeeding P. A. Edington as city manager of White Bear Lake, Minn., is HAROLD W. HOLZHEID, who was formerly a federal employee.

FLOYD E. JENNINGS, former manager of Pearisburg, Va., was appointed city manager of Buena Vista, Va., succeeding W. E. Lawson, Jr.

WARREN KNOWLES, one-time manager of Derry, N. H., was appointed city manager of Sanford, Fla., succeeding Tom Lemon.

The first manager of Provincetown, Mass., is THOMAS M. LIBBY, former manager of Oakland, Maine.

Harbor Springs, Mich., has appointed ALDWYN C. WAGER to succeed Howard R. Gohlke as city manager.

Lebanon, Mo., has appointed the former Chief of Police, GEORGE WALKER, to succeed Otis L. Barbarick as city manager.

Succeeding Tevis Huguely as city manager of Corbin, Ky., is W. L. WALKER formerly an Army major.

The first manager of Prattville, Ala., is JOHN F. WATKINS.

Hazard, Ky., has appointed RALPH M. WOOD to succeed W. G. Babbit as city manager.

CLARENCE E. RIDLEY
Executive Director
International City Managers' Association

REPRESENTATIVE MUNICIPAL BOND ISSUES

April 1 to April 9, 1954

Date of Sale			*Purpose*	*Average Maturity (Years)*	*Net Interest Cost Per Cent*
4-1-54	Sherburne, N. Y.	$ 75,000	Water Supply System	12½	2.73
4-1-54	Westbury, N. Y.	60,000	Village Garage	2¾	1.46
4-1-54	Marshall Co., Minn.	31,000	School District	7½	3.24
4-2-54	Warren Co., Ohio	10,000	Children's Home Improvement	6⅓	1.903
4-3-54	Vermilion, Ohio	40,000	Fire House Building	9	2.455
4-5-54	Atlanta, Ga.	2,200,000	Water Works Revenue	14½	2.332
4-5-54	Laconia, N. H.	70,000	Public Improvement and Equipment	3	1.376
4-5-54	Pemberton, N. J.	190,000	Sewer System	16⅓	2.839
4-5-54	Dalles City, Ore.	71,000	Bluff Improvement	5½	1.96
4-6-54	Montpelier, Vt.	750,000	High School Construction	13	2.021
4-6-54	St. Paul, Minn.	3,300,000	General Improvement	10	2.241
4-6-54	Indianapolis, Ind.	250,000	Sanitary District, Water	14¼	2.090
4-7-54	Oelwein, Iowa	9,000	Street Improvement	5	2.383
4-7-54	Ithaca, N. Y.	150,000	East State St. Extension, Water District	22	2.56
4-7-54	State College, Pa.	60,000	Street Improvement	5½	1.70
4-8-54	Lima, Ohio	1,750,000	Sewage Disposal	13⅓	2.487

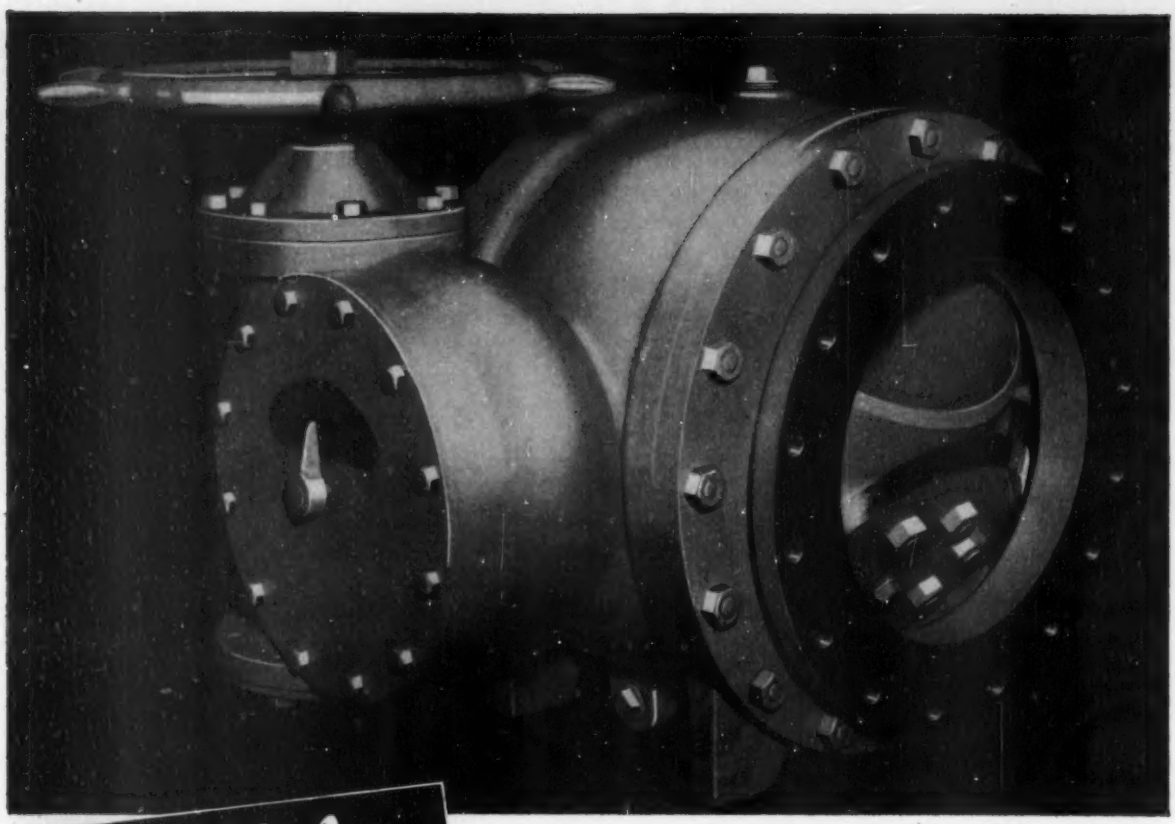
COMPILED from THE DAILY BOND BUYER

"How to Be a Hero In Your Own Home Town"

THIS IS THE TITLE of a 22-page booklet issued by the Broadcast Advertising Bureau in cooperation with The Advertising Council (25 West 45th Street, New York 19, N. Y.). Its purpose is to encourage retailers and companies with plant city advertising to support public service campaigns on local radio stations. Four different sample plans are outlined.

"Whatever your business," declares the booklet, "your seasonal or year-round association with public service—through radio—will identify you as an advertiser who is concerned with, *and doing something about* safeguarding the interests and promoting the welfare of his community."

A special helpful feature at the back of the book is a double-page calendar of 1954 Public Service Radio campaigns.



A New Valve by SMITH

THE S. MORGAN SMITH COMPANY introduces the

SMITH BALL VALVE! The first showing will be at the American Water Works Association Convention in Seattle, May 23–28, 1954!

The type and design of this Ball Valve have been proven by performance in many installations.

Be sure to see our Representatives at Booths 146-149 at the Convention, or write us direct for data on the Smith Complete Line of Valves.

S. MORGAN SMITH Co.

YORK, PENNA. U.S.A.

Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

***May 13-15—Nashville, Tenn.**
TENNESSEE MUNICIPAL LEAGUE. Annual Meeting (Hermitage Hotel). Exec. Sec., Herbert J. Bingham, 228 Capitol Blvd., Nashville 3, Tenn.

May 16-20—Columbus, Ohio
AMERICAN PLANNING AND CIVIC ASSOCIATION. National Citizens Conference on Planning (Neil House). Exec. Sec., Harlean James, 901 Union Trust Bldg., 15th and H Sts. NW., Washington, D. C.

May 17-22—Washington, D. C.
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Meeting (Hotel Statler). Sec.-Treas., Hovey T. Freeman, 60 Batterymarch St., Boston 10, Mass.

May 18-21—Detroit, Mich.
NATIONAL INSTITUTE OF MUNICIPAL CLERKS. Annual Meeting (Hotel Statler). Pres., Arthur Shinners, Town Hall, Brookline, Mass.

May 20-21—Boston, Mass.
AMERICAN SHORE AND BEACH PRESERVATION ASSOCIATION. Annual Meeting (Sheraton Plaza Hotel) Sec.-Treas., P. J. Gannon, 1060 Broad St., Newark 2, N. J.

May 23-26—Chicago, Ill.
NATIONAL ASSOCIATION OF PURCHASING AGENTS. Annual Meeting (Conrad Hilton Hotel). Sec., Eugene A. Gump, Purchasing Agent, State of Michigan, Lansing, Mich.

May 23-27—San Francisco, Calif.
MUNICIPAL FINANCE OFFICERS' ASSOCIATION OF THE UNITED STATES AND CANADA. Annual Meeting. Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chicago, Ill.

May 23-28—Seattle, Wash.
AMERICAN WATER WORKS ASSOCIATION—National group meeting jointly with the Pacific Northwest Section. Annual Conference. Sec., AWWA, Harry E. Jordan, 521 Fifth Ave., New York, N. Y.; Sec.-Treas., Pacific Northwest Section, O. P. Newman, Box 548, Boise, Idaho.

May 24-26—Elmira, N. Y.
EASTERN ASSOCIATION OF FIRE CHIEFS. Annual Meeting (Hotel Mark Twain). Sec., Chief Edwin J. Clark, Box 271, Wayne, Pa.

June 2-4—Sioux Falls, S. D.
LEAGUE OF SOUTH DAKOTA MUNICIPALITIES. Annual Meeting (Cataract Hotel). Exec. Dir., J. G. Barger, City Hall, Aberdeen, S. D.

June 9-12—Moorhead, Minn.
LEAGUE OF MINNESOTA MUNICIPALITIES. Annual Meeting (F-M Hotel). Exec. Sec., C. C. Ludwig, 15 University Library Bldg., Minneapolis 14, Minn.

June 9-12—Omaha, Nebr.
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Meeting (Fontenelle Hotel). Sec.-Treas., 1616 Eye St. NW., Washington, D. C.

June 10-11—Spokane, Wash.
ASSOCIATION OF WASHINGTON CITIES. Annual Meeting (Davenport Hotel). Exec. Sec., Chester Biesen, 250 Smith Hall, Unisity of Washington, Seattle 5, Wash.

June 10-12—McCall, Idaho
IDAHO MUNICIPAL LEAGUE. Annual Convention (Shore Lodge). Sec.-Treas., Robertson Smith, 455 W. Liberty St., Weiser, Idaho.

***June 11-12—Ocean City, Md.**
MARYLAND MUNICIPAL LEAGUE. Annual Meeting. Exec. Sec., Joseph M. Ray, University of Maryland, Box 276, College Park, Md.

June 13-16—Chicago, Ill.
NATIONAL ASSOCIATION OF TAX ADMINISTRATORS. Annual Meeting (La Salle Hotel). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago, Ill.

***June 13-18—Chicago, Ill.**
AMERICAN SOCIETY FOR TESTING MATERIALS. Annual Meeting (Hotels Sherman and Morrison). Exec. Sec., R. J. Painter, 1916 Race St., Philadelphia, Pa.

***June 14-15—Syracuse, N. Y.**
NEW YORK SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Spring Meeting (Hotel Syracuse). Exec. Sec., R. C. Sweeney, State Department of Health, White Plains, N. Y.

June 15-19—Boston, Mass.
THE AMERICAN INSTITUTE OF ARCHITECTS. Annual Convention (Hotel Statler). Convention Manager, Arthur B. Holmes, 1735 New York Ave. NW., Washington 6, D. C.

June 16-18—Estes Park, Colo.
COLORADO MUNICIPAL LEAGUE. Annual Meeting (Stanley Hotel). Exec. Dir., Jay Bell, 327 Norlin Library, Boulder, Colo.

June 16-18—Monticello, N. Y.
NEW YORK STATE CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Laurels Country Club). Exec. Sec., Morgan Strong, 6 Elk St., Albany, N. Y.

***June 17-19—Missoula, Mont.**
MONTANA MUNICIPAL LEAGUE. Annual meeting (Florence Hotel). Sec., C. H. Brewer, Box 51, Kalispell, Mont.

June 19-23—Bedford, Pa.
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Meeting (Bedford Springs Hotel). Sec.-Treas., H. A. Fritschman, 2325 Darby Road, Havertown, Pa.

June 22—Boonton, N. J.
AMERICAN WATER WORKS ASSOCIATION—New Jersey Section. Summer Outing, Inspection Trip, and Luncheon. For information, address Sec., C. B. Tygert, Box 178, Newark 1, N. J.

June 23-25—Allentown, Pa.
AMERICAN WATER WORKS ASSOCIATION—Pennsylvania Section. Annual Meeting (Americus Hotel). Sec., L. S. Morgan, State Department of Health, Greensburg, Pa.

June 24-26—Biloxi, Miss.
MISSISSIPPI MUNICIPAL ASSOCIATION. Annual Meeting (Buena Vista Hotel). Mgr., George Lemon Sugg, P. O. Box 531, Jackson, Miss.

June 24-26—Richmond, Ind.
CENTRAL STATES SEWAGE WORKS ASSOCIATION. Annual Meeting (Leland Hotel). Exec. Sec., A. Paul Troemper, Sewage Treatment Plant, Richmond, Ind.

June 28-30—Boston, Mass.
AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS. Annual Meeting (Hotel Somerset). Corres. Sec., Bradford Williams, 9 Park St., Boston 8, Mass.

June 28-30—Pittsburgh, Pa.
PENNSYLVANIA STATE ASSOCIATION OF BOROUGHS. Annual Meeting (William Penn Hotel). Sec., H. F. Alderfer, Room 281, The Capitol, Harrisburg, Pa.

July 21-24—New York, N. Y.
NATIONAL SECRETARIES ASSOCIATION. Annual Meeting (Waldorf-Astoria Hotel). Exec. Sec., Helen J. Boyle, 25 E. 12th St., Kansas City 6E, Mo.

July 25-31—Sao Paulo, Brazil
INTERAMERICAN ASSOCIATION OF SANITARY ENGINEERING. Interamerican Conference of Sanitary Engineering (Engineering Institute of Sao Paulo, Polytechnic School of the University of Sao Paulo). For information, address the General Secretariat, IV International Conference of Sanitary Engineering, Caixa Postal 8099, Sao Paulo, Brazil.

July 26-28—Philadelphia, Pa.
PENNSYLVANIA CHIEFS OF POLICE ASSOCIATION. Annual Meeting (Benjamin Franklin Hotel). Exec. Dir., Samuel Siegle, 420 State Theatre Bldg., Harrisburg, Pa.

July 27-29—New York, N. Y.
NEW YORK STATE ASSOCIATION OF CHIEFS OF POLICE. Annual Convention (Hotel New Yorker). Exec. Sec., R. W. Morris, P. O. Box 991, Syracuse 1, N. Y.

***Aug. 25-27—State College, Pa.**
PENNSYLVANIA SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Pennsylvania State College). State College, Pa. Sec.-Treas., Bernard S. Bush, Kirby Health Center, Wilkes-Barre, Pa.

Aug. 29-Sept. 2—Windsor, Ontario
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Meeting (Prince Edward Hotel). Exec. Dir., George S. Mooney, Office M-16, Mount Royal Hotel, Montreal, Quebec, Canada.

***Aug. 30-Sept. 3—Atlantic City, N. J.**
NATIONAL SHADE TREE CONFERENCE. Annual Meeting (Haddon Hall). Sec.-Treas., L. C. Chadwick, Department of Horticulture, Ohio State University, Columbus, Ohio.

***Sept. 9-10—Montauk, L. I.**
AMERICAN WATER WORKS ASSOCIATION—New York Section. Annual Fall Meeting (Montauk Manor). Sec.-Treas., Kimball Blanchard, 50 W. 50th St., New York 20, N. Y.

***Sept. 12-15—San Francisco, Calif.**
NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS. Annual Meeting (St. Francis Hotel). General Counsel, Charles S. Rhyne, 726 Jackson Pl. NW., Washington 6, D. C.

***Sept. 13-16—Atlantic City, N. J.**
ILLUMINATING ENGINEERING SOCIETY. Annual Meeting (Chalfonte-Haddon Hall). Exec. Sec., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

***Sept. 15-17—Grand Island, Nebr.**
LEAGUE OF NEBRASKA MUNICIPALITIES. Annual Convention (Hotel Yancy). Exec. Sec.-Treas., C. E. Beal, 303 Continental Bldg., Lincoln, Nebr.

***Sept. 16-18—Salt Lake City, Utah**
UTAH MUNICIPAL LEAGUE. Annual Convention (Newhouse Hotel). Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

***Sept. 19-21—Roanoke, Va.**
LEAGUE OF VIRGINIA MUNICIPALITIES. Annual Convention (Hotel Roanoke). Exec. Sec., Harold I. Baumes, 905 Travelers Bldg., Richmond 19, Va.

***Sept. 26-30—New Orleans, La.**
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Conference (Roosevelt Hotel). Exec. Sec., Edward J. Kelly, 1424 K St. NW., Washington 5, D. C.

***Sept. 27-30—Kansas City, Mo.**
INSTITUTE OF TRAFFIC ENGINEERS. Annual Meeting (Muehlebach Hotel). Exec. Sec., M. Mansfield Todd, Strathcona Hall, New Haven 11, Conn.

***Sept. 27-Oct. 1—St. Louis, Mo.**
NATIONAL RECREATION CONGRESS. Annual Meeting (Jefferson Hotel). Sec., T. E. Rivers, 315 4th Ave., New York 16, N. Y.

***Oct. 3-8—Baltimore, Md.**
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Conference (Hotel Lord Baltimore). Exec. Sec., Alfred B. LaGasse, 143 S. Lincoln, Aurora, Ill.

You can't afford to forget...

That cast iron pipe lasts over 100 years—

That cast iron pipe is inherently stronger, tougher, uniform in quality—

That cast iron pipe offers low installation costs, plus savings throughout its life because of low maintenance costs—

That cast iron pipe's long life and economy saves millions of tax dollars—

That cast iron pipe is the standard conduit for carrying water underground—

That before you experiment with substitutes in your waterworks system, you should study these facts and recognize the guarantee they offer: only cast iron pipe gives you a *proven record* of economy through *decades of use!* And experienced city officials have, for over three-quarters of a century, chosen Clow Cast Iron Pipe as the finest made. They know Clow offers consistent high quality, coupled with excellent service and fast delivery. They know *centrifugally cast* Clow Pipe offers longer life, greater economy and that it meets all currently approved specifications now in existence. Write today for complete, factual information.

JAMES B. CLOW & SONS

201-299 North Talman Avenue • Chicago 80, Illinois

and their National Cast Iron Pipe Division, Birmingham, Ala.
Subsidiaries: Eddy Valve Co., Waterford, N. Y.
Iowa Valve Co., Oskaloosa, Iowa

CAST IRON

Municipal & Civic Publications

Local Government Structure In the United States

Bureau of the Census, U. S. Department of Commerce. For sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 1954. 91 *pp.* 50 *cents.*

The present report describes the definitions, criteria, and standards applied by the Census Bureau in classifying governmental units, and provides for each state, the District of Columbia, Alaska, Hawaii, and Puerto Rico, a summary description of local governmental units for which there is legal authorization. Such units are counties, municipalities, townships, school districts, special districts, and subordinate agencies and areas.

Department of Parks, 20 Years of Progress

1934-1954.—*A Report to the Mayor and the Board of Estimate by the Department of Parks, Arsenal, Central Park, New York. March* 1954. 60 *pp.*

The story of progress made by the Department of Parks of New York City during the past 20 years tells of the following gains: land for the park system has increased from 14,000 to 27,000 acres; playgrounds have increased in number from 119 to 597; instead of one mile of beach facilities as in 1934 there are now 16 miles.

A section on parkways reviews the current $600,000,000 construction program. There are also sections on the operation and daily activities of recreation centers, and on museums and institutions.

Population Growth in Standard Metropolitan Areas

1900-1950. *With an Explanatory Analysis of Urbanized Areas—By Donald J. Bogue. Housing and Home Finance Agency. For sale by Superintendent of Documents, Government Printing Office, Washington 25, D. C.* 1953. 85 *pp.* 55 *cents.*

In 1950 the Bureau of the Census made changes in its treatment of area data in the fields of economic and social statistics. This made all earlier censuses relating to metropolitan areas and to urban population difficult to compare with those for 1950 and later years. The present monograph, which is the first of a series of seven, re-establishes the continuity lost by this shift from metropolitan districts to standard metropolitan areas. Working from the 168 standard metropolitan areas for 1950, the author has reconstructed comparable data by decades from 1900.

The Community Industrial Development Survey

The First Step in a Community Industrial Expansion Program—Department of Manufacture, Chamber of Commerce of the United States, 1615 *H Street N.W., Washington* 6, *D. C.* 1954. 18 *pp.* 50 *cents.*

This basic guide explains why a survey is needed; how to organize the work; where to get expert outside help. It tells what to survey, how to make the survey, and how to present results; and includes a survey outline, sources of survey information, and helpful references.

Urban Conservation

A Report to the Conservation Committee of the Metropolitan Housing and Planning Council by its Conservation Study Staff. 69 *W. Washington St., Chicago* 2, *Ill.* 1953. 350 *pp.* 3 *Volumes.* $5 *per volume.*

A wealth of practical material of interest to many cities is contained in this comprehensive report, directed toward solving Chicago's problem of neighborhood conservation.

Volume I outlines the main problem areas in conservation, and includes a description of conservation activities in other cities—Baltimore, Boston, New York City, Philadelphia, and Washington, D.C. Volume II contains several case studies of conservation areas. Volume III outlines the legal possibilities for conservation, including eminent domain, compulsory repairs through a lien law, property licensing, street vacations and other public improvements, neighborhood corporations, *lex addickes,* and special districts. Public and private financial and organizational possibilities are also discussed, and the volume concludes with the draft of a Conservation Authorities Act.

Conservation and Rehabilitation Of Major Shopping Districts

By Richard Lawrence Nelson and Frederick T. Aschman. Technical Bulletin No. 22 *of the Urban Land Institute,* 1737 *K St. NW., Washington* 6, *D. C. February* 1954. 44 *pp.* $5.

According to this study, the problem of redesigning and reorganizing the older shopping districts in a practical way so that they may either retain or regain their solvency and efficiency may be solved by: unifying the district into a definite entity; improving the site layout through establishment of new relationships between stores, parking, pedestrians, trucks, etc.; eliminating blight; providing new amenities; obtaining cooperation of the multiple interests acting jointly to maintain scientific management practice in areas of mutual interest and necessity.

Proceedings for the Fourth Annual National Noise Abatement Symposium

National Noise Abatement Council, 9 *Rockefeller Plaza, New York, N. Y.* 1954. 110 *pp.* $1.

Reproduced in the Proceedings are articles on the nature and the physics of outdoor noise; city planning for reduced noise; outdoor noise caused by industrial plants, airports and trucks; legislation affecting noise; combating the effects of noise, etc.

FHA Land Planning Data Sheet 72 On Block and Lot Grading

Federal Housing Administration, Washington 25, *D. C. Copies available through field offices.* 1954. 8 *pp.*

For planners, engineers, and architects this is a time-saving and reliable method for identifying grading types to fit individual blocks and lots, and for determining the proper elevations of house floors and key points on the land.

Municipal Index 1954

The Purchasing Guide for City Officials. American City Magazine Corporation, 470 *Fourth Ave., New York* 16, *N. Y.* 1023 *pp.* $5 *per copy.*

This 28th annual edition of *The Municipal Index* is, without doubt, the best to come off the presses thus far. It includes a major new section on Municipal Trends, based on equipment owned and needed in various fields, including street departments, road maintenance, water works, municipal sewage-treatment plants, refuse collection, food-waste disposers, relighting, traffic signals, fire equipment, and municipal accounting equipment.

The section on "Who's Who in Equipment and Supplies" has been improved through the use of small sketches and descriptions of some of the major types of municipal equipment and installations, and how they can be used.

The book also includes all regular features, including comprehensive directories of municipal officials and state highway and state health department officials; a 17-page directory of consultants in the municipal field; state maps and populations of cities over 1,000; the classified list of products and services; and the "Where to Buy" sections containing complete descriptions and specifications by advertisers of their products and services in the municipal equipment field.

Community Organization for Neighborhood Development Past and Present

By Sidney Dillick. A Woman's Press book distributed by William Morrow & Company, New York , N. Y. 1953. 198 *pp.* $4.

Dr. Dillick traces the history of organization at the local level from its beginnings in England during the Industrial Revolution. He discusses the history of neighborhood and settlement houses and of organization for defense services, for better education, and for other welfare purposes. Although recently published, the book apparently does not cover events of the 1950's. The 18-page bibliography contains no reference to publications dated later than 1949.

The Volume of Residential Construction

1889-1950—*By David M. Blank. National Bureau of Economic Research, Inc.,* 1819 *Broadway, New York* 23, *N. Y.* 1954. 111 *pp.* $1.50.

Derived from a joint study of capital formation and financing in residential real estate by the Institute for Urban Land Use and Housing Studies, Columbia University, and the National Bureau of Economic Research, Inc., this study arrives at some interesting conclusions on trends of construction costs, sizes of houses constructed, popularity of single-family houses, expenditures for nonhousekeeping residential structures—as hotels, motor courts, vacation cottages, etc. Dr. Blank finds a marked increase in the length of cycle swings in both construction starts and expenditures.

(*Continued on page* 209)

Proud "city fathers" must look to the future, too!

IOWA hydrants and valves are never "orphans"!

No need to worry about the future of your city's water system when you choose *Iowa*. You know you're buying a reliable product from a reliable firm and that there will always be replacement parts, when and as needed. What you may not know, though, is this . . . *Iowa* hydrants are easily and economically serviced—even by new employees without special training.

Below are additional facts to keep in mind when you plan to expand or replace any part of your city water works.

IOWA HYDRANTS

Provide full, truly unrestricted water way.

Open *with* the pressure for faster water delivery.

Close *against* the pressure to eliminate water hammer, provide flushing action.

Assure positive drainage.

Are available for any type of connection.

All working parts removable through top—no digging or special tools required.

Meet all A.W.W.A. specifications.

IOWA GATE VALVES

Double disc, parallel seat.

Positive wedging action for efficient, no-leak closing.

Gates hung loosely from stem nut—no binding.

Rugged, time-proved design means long life, low service costs.

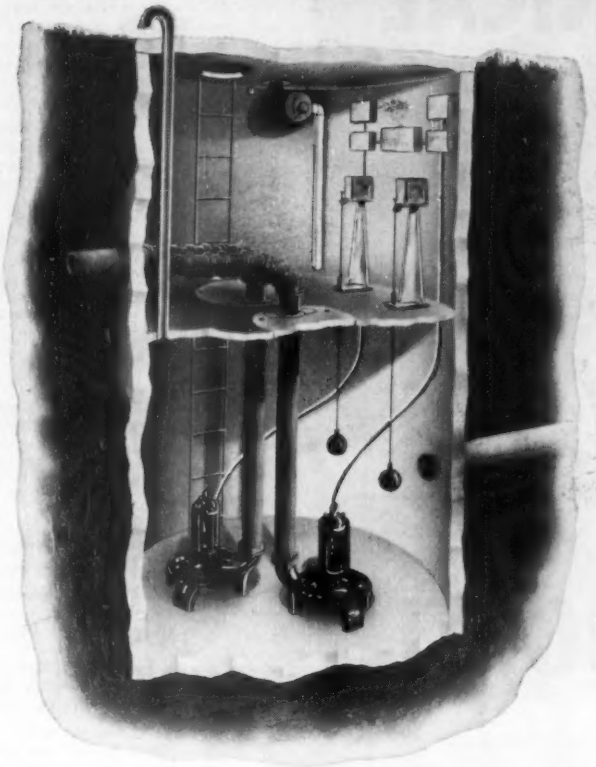
Available with bell, flange, or mechanical joint connections to fit any existing or planned installation.

Meet all A.W.W.A. specifications.

The best insurance policy is the order that specifies IOWA!

IOWA VALVE COMPANY
A Subsidiary of James B. Clow & Sons
201-299 NORTH TALMAN AVENUE
CHICAGO 80, ILLINOIS

The SUBMERSIBLE SEWAGE EJECTOR



Engineered for

UNDERGROUND LIFT STATIONS

The **weil** NON-CLOG Screenless Submersible Sewage Ejector with the BLADELESS impeller will pump ALL sewage — household sewage, industrial sewage — even rags.

Capacities 35 to 300 GPM with heads to 45 feet.
Discharge: 3" and 4"; ½ H.P. to 3 H.P. Motors.

Illustration shows economical installation which does not require a PUMP HOUSE to mar the landscape. This reduces the overall cost of the Lift Station.

Send for NEW *Bulletin*

NEW Bulletin SE 680 B with plans and specifications for lift station installations as well as other applications will be sent upon request.

weil PUMP COMPANY
1518A NORTH FREMONT STREET • CHICAGO, ILLINOIS

ROADMASTER
Street Sweeper
WIRE

High Scleroscope Rating
Uniform temper.

Specially processed for high fatigue — against breakage. Long wearing. Conveniently cut and delivered in 100 and 200 lb. boxes. Prompt shipment from stock of all standard sizes.

This gutter broom wire will prove an economy in your service.

"MORE MILES PER BRUSH"

JOHNSON
Steel & Wire Co., Inc.
WORCESTER 1, MASS.
New York Philadelphia Pittsburgh
Cleveland Detroit Akron Chicago
Atlanta Houston Tulsa
Los Angeles Toronto
A SUBSIDIARY OF PITTSBURGH STEEL COMPANY

Sparling WATER CONTROL EQUIPMENT

INFORMATION AT YOUR FINGERTIPS

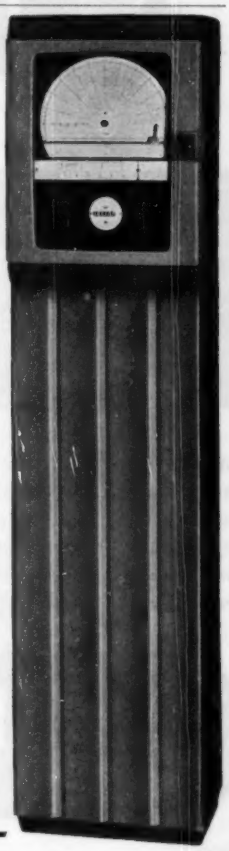
WHAT you need to know, WHERE you need to know it, with a Sparling Recorder like this! It is the companion to the Sparling Meter on the Main Line and tells instantly, though miles away, what has passed through that main line, shows present rate of flow, and produces clear record of rates of flow—7-day or 24-hour. Other models for up to 60 days!

•

Bulletin 313 and quotations are yours for the asking.

SPARLING METER COMPANY
INCORPORATED

LOS ANGELES 54.....Box 3277
CHICAGO 8.....1500 S. Western Ave.
CINCINNATI 2.....626 Broadway
NEW YORK 17.....101 Park Avenue
BOSTON 8.....6 Beacon Street
SEATTLE 1.....1932 First Avenue
DALLAS 1.....726 Reserve Loan Life Bldg.
KANSAS CITY 6, MO.....6 East 11th St.
ATLANTA 3.....66 Luckie St. N.W.
SAN FRANCISCO 24.....85 Industrial St.



ALL MECHANICAL

JOINT

ELIMINATES

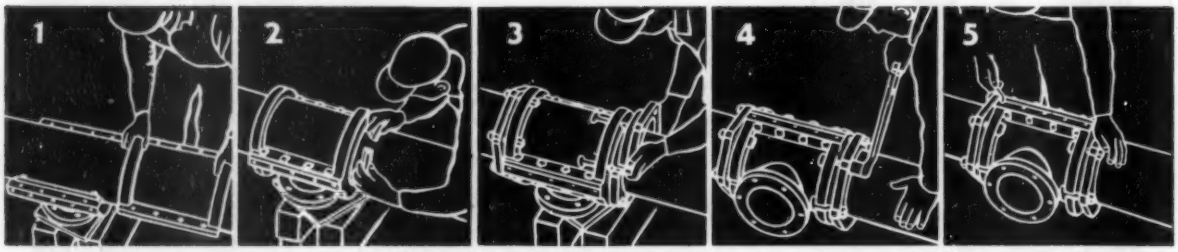
MELTING

POURING

CAULKING

SMITH TAPPING SLEEVE & VALVE

NOTE THE SIMPLE INSTALLATION PROCEDURE



Smith Mechanical Joint Tapping Sleeves are installed as follows: 1. Block Sleeve outlet half under pipe, position side flange gaskets. 2. Bolt Sleeve halves together, position end joint gaskets. 3. Install follower rings, hand tighten bolts and nuts. 4. Rotate Sleeve outlet flange to desired position, tighten follower ring nuts. 5. Tighten side flange gasket compression screws, attach Tapping Valve. The permanent leakproof installation is complete and ready for tapping. The installed cost of Tapping Sleeve and Valve connections is reduced by quicker assembly, elimination of skilled labor and costly jointing material. Bulletin MJ1 will be immediately sent on request.

50

FIRE HYDRANTS · VALVES · SINCE 1896

THE A.P. SMITH MFG. CO.

EAST ORANGE, NEW JERSEY

Four Steps to Better Government of New York City

A Plan for Action (Part 2)—Second and Final Report of the Temporary State Commission to Study the Organizational Structure of the Government of the City of York. State Capitol, Albany, N. Y. February 1954. 102 *pp.*

The four steps recommended in the Commission's first report, issued in September 1953, were: the creation of a city administrator, the continuation of the deputy mayor with added responsibilities, the installation of a performance budget, and the establishment of a modern system of personnel management. Official action taken so far on these recommendations is reviewed in Part I of the present report.

Part II discusses several additional management problems which the Commission feels should have early consideration by the city government.

Part III presents legislation to implement the four recommendations.

Part IV contains the minority report, and Part V a special statement by a member who concurs with the majority.

Kentucky Community Series Reports 13 and 14

Prepared by the Bureau of Community Service, College of Arts and Sciences, University of Kentucky, Lexington. 1953.

AS THE PEOPLE SEE IT, *Harrodsburg and Mercer County, Kentucky. August,* 1953. 40 *pp.*

Interviews and informal discussions with the people of Harrodsburg and Mercer County, supplemented by other research, give the people's views on three rather bitter, recent controversies: bringing in additional industry, local elections, and the defeat of an effort to raise funds for school expansion. Community organization and action are urged to bring together the divided population in this economically-evolving town.

THE SEARCH FOR RECIPES FOR COMMUNITY DEVELOPMENT, *A Brief Summary of Community School-for-a-Day. November* 1953. 14 *pp.*

The six community development courses in the University of Kentucky's 1953 Community School-for-a-Day were on "How to"—have better schools, approach planning and zoning, tackle the recreation problem, get more people to take part in community affairs, develop local leadership, and deal with local conflict.

American Planning and Civic Annual

Edited by Harlean James, American Planning and Civic Association, 901 *Union Trust Bldg., Washington* 5, *D. C.* 1953. 175 *pp.* $3.50 *to nonmembers of Association. Free to members.*

Recorded in this Annual are recent civic advances in the fields of planning, parks, housing, neighborhood improvement, and conservation of natural resources, including addresses delivered at the National Citizens Conference on Metropolitan Planning held at New Orleans, March 11-14, 1953, and several addressed delivered at the 33rd annual meeting of the National Conference on State Parks held at Cordele, Ga., October 12-17.

Tennessee City and Regional Planning Newsletter

Harlan Mathews, Editor. Tennessee State Planning Commission, 517 *Commerce St., Nashville, Tenn. Vol. I, No.* 1, *March* 1954. *Published monthly.*

As a means of providing up-to-date, technical information to the numerous public officials and citizens who serve as members of local planning commissions, the *City and Regional Planning Newsletter* has been initiated. It will include highlights of data formerly contained in the Commission's *Public Works Planning Newsletter* while offering a larger amount of information of practical value to local planning commission members. The new publication will be the official organ of local planning bodies in Tennessee.

Site Design, Parking and Zoning For Shopping Centers

February 1954 *Information Report of the Planning Advisory Service, Published by the American Society of Planning Officials,* 1313 *E. 60th St., Chicago* 37, *Ill. Available only through subscription to the Service.* 33 *pp.*

The current report applies the basic principles of shopping-center design and operation to planning and zoning problems. It discusses the planning aspects of shopping-center design and location, and space, design, and location for parking areas. Some important zoning provisions proposed or enacted to deal with shopping centers are examined; and the differences between regional and neighborhood shopping centers are analyzed.

WHY USE JOHNSON WELL SCREENS?

1. Less drawdown.
2. Greater specific capacity.
3. Lowest pumping cost per million gallons of water.

True economy is measured not by first cost alone, but in lowest yearly cost. The JOHNSON WELL SCREEN combines an unmatched record of experience and dependability with greatest strength and durability. It is the finest and most truly economical well screen in the world.

EDWARD E. JOHNSON, INC.

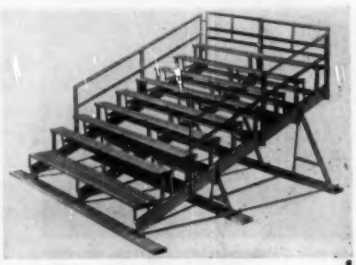
well screen specialists since 1904

St. Paul 14, Minn.

Ironworkers HUSSEY SAFE SEATING Since 1835

PORTABLE SEATING FOR EVERY OCCASION

With Hussey Patented Portable Steel Bleachers and Grandstands, one set of seats will take care of both your indoor and outdoor needs. They cannot collapse and can be erected and taken down faster and easier than any other stand on the market. Low in cost. 6, 10 and 15 tier 12 foot sections in stock. Other sizes to order. Also, "Roll-Out" Gym Seats.



Single Section — Model 8 Portable Steel Grandstand

FREE catalogs and complete information on request. Write today

Hussey Mfg. Co., Inc. • 546 R.R. Ave • N. Berwick, Me.

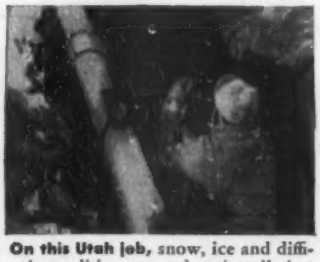
Also Mfrs. of Water Sports Equipment, Flag Poles, and Misc. Iron.

Question:

Can we get installation savings and performance too?

Answer:

Yes...with the new Ring-Tite Coupling



On this Utah job, snow, ice and difficult conditions caused no installation slowdown.

In this California installation, flexible Ring-Tite joints permitted easy conformance to curves.

Speeds assembly of Transite Pressure Pipe

In state after state, contractors are learning that Transite® Pressure Pipe and the new Ring-Tite® Coupling provide fast, sure pipe line assembly with tight, dependable joints . . . strength to assure lasting, trouble-free water mains through the years.

With Ring-Tite, installation costs less—assembly follows digger closely. Typical contractors' comments: "On entire job, trencher and backfiller seldom over 150 feet apart . . ." "Laid 6" Class 150 Ring-Tite at a rate of 5000 feet per 8 hours."

The design of the Ring-Tite Coupling permits quick, easy alignment. To assemble, rubber rings are simply popped into grooves. Then lubricated pipe ends slide in under rings smoothly, easily and surely.

Pipe ends stop positively—with ends automatically separated within coupling. This separation gives the line flexibility to withstand shock and vibration, relieves line stresses, permits conformance to curves. Installations can be completed under adverse weather, temperature or terrain conditions. No complicated equipment is required.

Transite Pressure Pipe and the Ring-Tite Coupling are made of asbestos and cement. Strong and durable, they cannot rust; are highly resistant to corrosion. Tested to A.W.W.A. specifications.

For the new Ring-Tite folder TR-142A—please write to Johns-Manville, Box 60, New York 16, N. Y.

(See us at Seattle—Booths 70-72 A.W.W.A. Convention)

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville TRANSITE PRESSURE PIPE

NOW WITH THE RING-TITE COUPLING

Urbanistica, No. 13

Published by Italian Town Planning Institute, Torino. 114 *pp. Available from Editorial Department, The American City,* 470 *Fourth Ave., New York* 16, *N. Y.* $2.50 *per copy.*

This issue includes some beautifully illustrated articles on the Acropolis of Athens; the planning of Guam; new planning proposals and schemes in Torina, Montecchio, Genoa, and Tuscany, and a major section of New Towns, the work of Clarence S. Stein, and photos of Letchworth and Welwyn Garden City. A separate eight-page summary in English is also included.

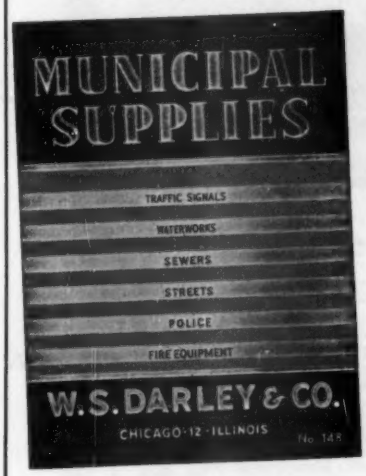
A Fight-Blight Plan For Binghamton, N. Y.

General Plan Report No. 5 *of the Broome County Planning Board,* 209 *County Court House, Binghamton, N. Y. December* 1953. 81 *mimeo pp.*

After surveying Binghamton's problem of blight, the report discusses plans for combatting this situation. Redevelopment is urged for Binghamton's priority clearance areas, blight control for deferred clearance areas, rehabilitation for areas of scattered blight, and conservation for above-standard areas.

Appendix A discusses procedures used for surveying conditions of blight and land use. Appendix B states provisions of New York State multiple residence law applicable to old buildings. And C gives a proposed housing ordinance regulating maintenance and occupancy of dwelling units.

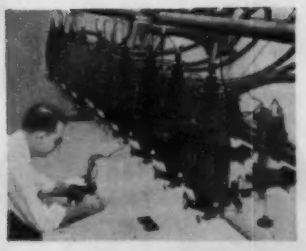
NEW CATALOG!

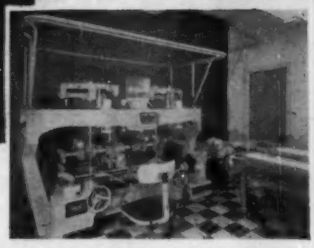


WRITE TODAY
For
100 PAGE
MUNICIPAL CATALOG

W. S. DARLEY & CO.
CHICAGO 12

no matter whether your job calls for... any One any two or a combination of the three





of the Worlds Finest Mapping Equipment
JACK AMMANN has the Right answer!

Through nearly a quarter of a century of experience in all parts of the world, Jack Ammann Photogrammetric Engineers have brought the modern science of aerial mapping to unexcelled perfection.

This has been made possible by a happy combination of the right planes, the right men with the right precision equipment. No expense has been spared in obtaining both personnel and equipment of the highest caliber.

For example, the Jack Ammann organization has available for use on your job—or any job where it may be needed—ALL THREE of the world's most highly regarded types of optical equipment for top quality aerial photogrammetric mapping.

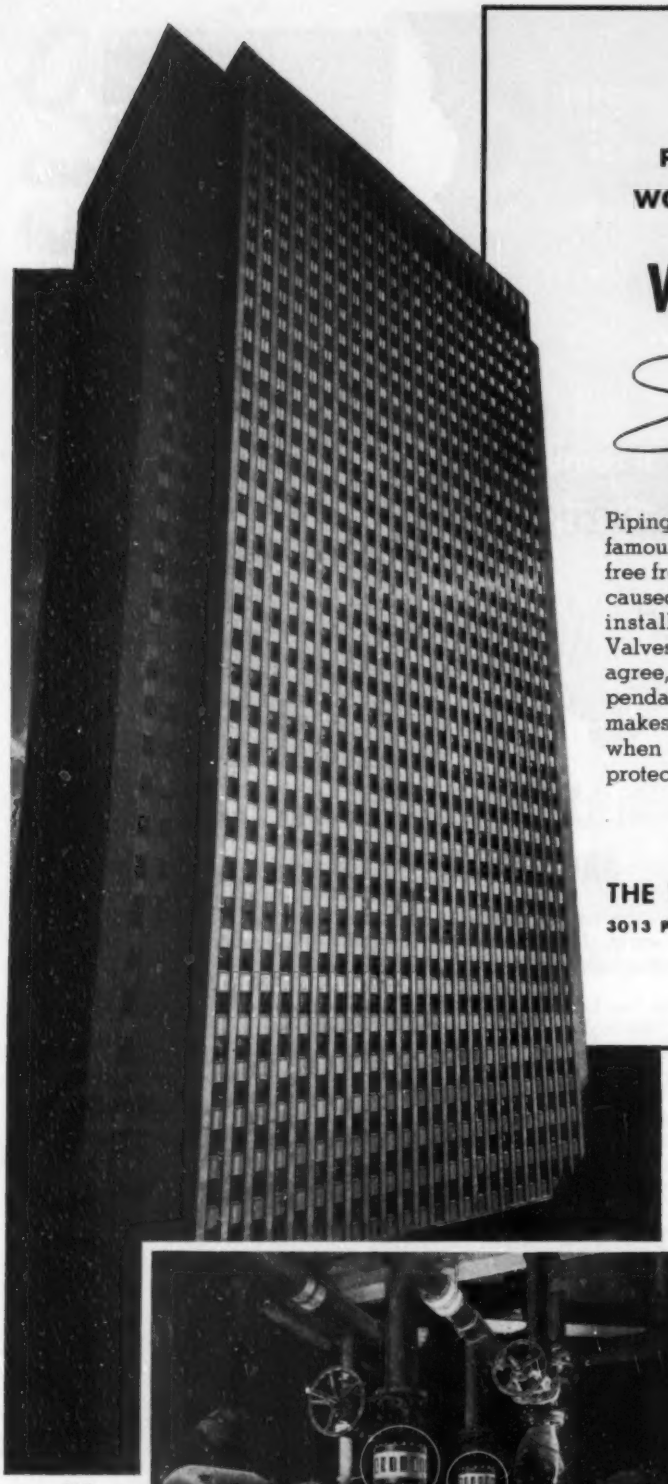
These, as technicians will recognize at a glance, are the Multiplex—the Kelsh plotter and Swiss imported Wild A7 Autograph.

Thus, Jack Ammann not only covers the world in providing peerless service in the field of aerial mapping and surveying, but also utilizes the world's most effective instruments—a point of supreme importance to YOU in the execution of YOUR mapping project.

Precise Maps for Cities — Highway Departments — Railroads — Power and Light
Oil and Mineral Exploration and Development — River Development and Irrigation — Etc.

Jack Ammann
PHOTOGRAMMETRIC ENGINEERS, INC
BROADWAY AT TENTH SAN ANTONIO 5, TEXAS
AIR SURVEYS—MAPS

EASTERN OFFICE: Manhasset, N. Y., 32 Hillcrest, P. O. Box 411, Phone Manhasset 7-1840
WESTERN OFFICE: (Denver) Lakewood, Colo., 995 Flower St., Phone Bel. 3-2090



525 Wm. Penn Place Building, Pittsburgh, Pa.

PROTECTING
PIPING SYSTEMS IN THE
WORLD'S FINEST BUILDINGS

Williams-Hager

FLANGED

Silent

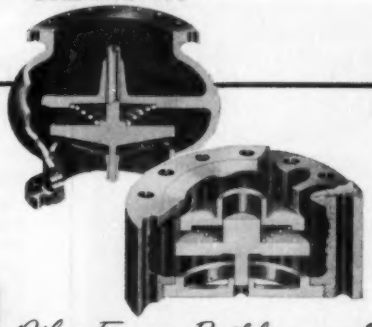
CHECK VALVES

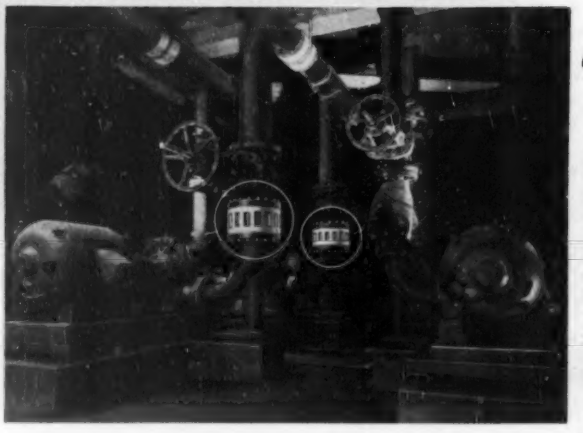
Piping systems of some of the world's most famous buildings are "safe and silent"—free from the damaging vibration and noise caused by *water hammer*—due to the installation of Williams-Hager Check Valves. This is a high tribute, you will agree, to their superior quality and dependability. A tribute, which we believe makes them worthy of your consideration when specifying check valves for assured protection of your piping systems.

Write for Bulletin 654

CHECK VALVES

THE WILLIAMS GAUGE CO., INC.
3013 PENNSYLVANIA AVE. PITTSBURGH 33, PA.
Established 1886





Other Famous Buildings and Hotels
IN WHICH WILLIAMS-HAGER VALVES HAVE BEEN INSTALLED

Pentagon Building, Washington, D.C.
Hotel Statler, Los Angeles, Calif.
Merchandise Mart, Chicago, Ill.
Hotel Conrad Hilton, Chicago, Ill.
Empire State Building, New York, N.Y.
Hotel Waldorf Astoria, New York, N.Y.
Alcoa Building, Pittsburgh, Pa.
Hotel Drake, Chicago, Ill.
Rockefeller Center Buildings, New York, N.Y.
Fidelity Philadelphia Trust Building, Philadelphia, Pa.
Hotel Astor, New York, N.Y.
Metropolitan Life Insurance Building, New York, N.Y.
Hotel Sherry Netherlands, New York, N.Y.
Prudential Life Insurance Building, Newark, N.J.
Chicago Tribune Building, Chicago, Ill.
Federal Reserve Bank Building, Chicago, Ill.
New England Mutual Life Insurance Building, Boston, Mass.
Standard Oil Building, Chicago, Ill.
U.S. Steel Corp. Building, New York, N.Y.
Daily News Building, Chicago, Ill.

Housing Action Report of 1954

To Mayor Martin H. Kennelly. Citizens Committee to Fight Slums. Available from Metropolitan Housing and Planning Council, 69 W. Washington St., Chicago 2, Ill. 24 pp. Free.

The Committee, after making an overall appraisal of Chicago's housing situation, offers the following program for simultaneous and vigorous action on four fronts: (1) an effective and diversified program to prevent further slums from developing; (2) certain departmental reorganizations, accompanied by determined enforcement of adequate housing, building, and zoning laws; (3) acceleration of the program of slum clearance and residential redevelopment, to eliminate the blight which surrounds the central city, and (4) a sharp increase in the supply of standard housing available to families at all economic levels.

Report of Space Survey and Recommendations

By The Public Buildings Commission, City of Philadelphia, Pa. 1953. 170 *pp.*

The Commission was created by Mayor Joseph S. Clark, Jr., of Philadelphia, to study the space requirements of the courts and departments of the city government for the present and for a period covering the next 50 years. The Commission's report is presented in five parts: a summary of the problem with recommendations; survey of organizational and operational interrelationships, studies in space occupancy and requirements, studies on operating, building, and rehabilitation costs; related studies and appendix.

Effective Procedures for the Handling of Employee Grievances

By Louis J. Van Mol. Civil Service Assembly, 1313 *East 60th St., Chicago* 37, *Ill. Personnel Report Series No.* 531. 1953. 25 *pp.* $2. *(Special quantity rates)*

The author draws upon the experience of both private and public organizations (and particularly upon that of the TVA of which he is assistant director of personnel) to project a set of principles that should be woven into any effective grievance procedure.

Many procedures have been criticized by both employees and management as being overcomplicated and taking too much time. In some cases they are loaded in favor of the employee and in others in favor of the supervisor. Mr. Van Mol's discussion emphasizes the goals of grievance procedure and gives the reader the kind of background that will help him to devise the proper procedure for his own organization.

The Design of the Brazos County Courthouse and Jail

Caudill, Rowlett, Scott and Associates, Architects and Engineers, 425 *So. Main St., Bryan, Texas.* 1954. *About* 125 *pp.*

After considering all the problems involved in building a courthouse–jail for Brazos County, Texas—such as making maximum use of a small site, considering future as well as present needs, and keeping within the limits of the current bond issue—the achitects come up with four basic plans from which county officials can make a choice.

Aging and Retirement

The January 1954 *issue of* The American Journal of Sociology. *The University of Chicago Press, Chicago, Ill.* 116 *pp. Price for single issue,* $1.25.

The entire January issue of *The American Journal of Sociology* is devoted to problems of aging and retirement — economic, social, personal, community, working and leisure. Our readers may be especially interested in an article by William H. Harlan, entitled "Community Adaptation to the Presence of Aged Persons: St. Petersburg, Florida." This article describes how with more than 22% of its resident population now over 65 years of age, St. Petersburg has had to adapt to the smaller households, the smaller labor force, the lower incomes, and the types of services that characterize lives of older citizens.

An Administrative Case Study of Performance Budgeting in the City of Los Angeles, California

By George A. Terhune. Municipal Finance Officers Association of the United States and Canada, 1313 *East* 60*th St., Chicago* 37, *Ill. Accounting Publication Series No.* 11-1. *February* 1954. 22 *pp.* $1.25.

This account of the introduction of performance budgeting in the City of Los Angeles is based on the first-hand experience of the author who is chief administrative analyst of the city. It is a chronological record and complete explanation of all steps taken during the entire project, and as such, will be a valuable reference for other governmental agencies interested in this particular technique.

STEWART

SINCE 1901

Specialists

Sewer and pipe cleaning equipment

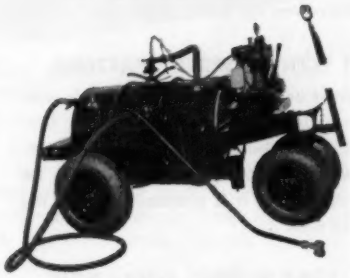
- SEWER RODS
- SECTIONAL STEEL RODS
- COMPLETE SEWER CLEANING MACHINES
- BRACES AND GUIDES
- BUCKETS, ROOT CUTTERS AND DRAG TOOLS

Save the expenses of experimenting. Consult Stewart for any problem in the SPECIALIZED FIELD of pipe cleaning

•

W. H. STEWART, INC.
P.O. Box 767, Syracuse, New York

PAVE DRIVEWAYS PATCH HIGHWAYS
BUILD PARKING AREAS & TENNIS COURTS
by penetration



"direct from the shipping drum"

MATERIALS HANDLED: Bituminous Binders: asphalt emulsions, light tars and cutbacks; Concrete Curing; Waterproofing; Weed Killers; Cleaning Solvents; Oil Base Paints. Tempering Tank (for heating heavier tars and asphalts).

ADVANTAGES: 1. Lower handling costs, 2. Faster, cleaner, more economical application, 3. larger daily thru-put, 4. easier, SAFER operation, 5. lower repair and maintenance expense.

TARRANT MFG. CO.
EAST AVE. SARATOGA SPRINGS, N. Y.

The Finest Equipment For Efficient ICE CONTROL!...

The Improved **BAUGHMAN *Hydraulic* SPREAD-MOBILE**

- ONE-MAN OPERATION
- COMPLETELY CAB CONTROLLED
- SPREADS 300-3300 LBS. PER MILE

Exclusive "CENTER-SPRED" DESIGN gives VISIBLE SPREAD...POSITIVE TRACTION

✓ ***COMPLETE HYDRAULIC OPERATION***

Both *width* and *amount* of material spread are now controlled right from the truck cab. This is achieved by two independently operated hydraulic motors. One drives the drag chain (the speed of which controls the amount of material). The other drives the distributor (the speed of which determines the width of spread).

✓ ***NEW IMPROVED "CENTER-SPRED" PATTERN***

Located between front and back wheels on driver's side, the distributor spreads material *in front of* all four wheels. Result: perfect traction for Spread-Mobile, complete visibility and control of spread. Baffles can be added to control spread so it is predominantly to the driver's side or curb side.

✓ ***ADAPTABLE TO YEAR 'ROUND OPERATION***

The Spread-Mobile can be used for ice-control in winter; in summer for such road maintenance work as oil-blotting, shoulder maintenance, etc.

HEAVY-DUTY POWER UNIT

Including 14-hp T.F. Wisconsin Gas Engine with all controls in truck cab.

EXCLUSIVE EXHAUST HEAT PREVENTS FREEZING

Patented chamber utilizes exhaust heat; prevents load freezing, aids penetration.

SPLIT-BOTTOM DUMP ADDS USEFULNESS

Adaptable in off-season periods to many of the functions of general dump body.

Write for Bulletin No. 370-H

BAUGHMAN MANUFACTURING CO., Inc.
150 Shipman Road, Jerseyville, Illinois

Community Planning Bibliographies

Guides for Community Planning—By Edward S. Kessler. American Society of Planning Officials, 1313 E. 60th St., Chicago 37, Ill. January 1954. 43 pp. $2.

Special sections and references have been included primarily for newly-formed planning commissions and citizens organizations interested in promoting planning programs and community development. The technical section includes important references under such headings as "Air Pollution," "Airports," "Annexation," "Industry," "Regional and Metropolitan Planning," "Urban Redevelopment and Zoning," among others. The bibliography also includes a suggested basic library for a planning commission, a list of planning periodicals, and of planning textbooks used in a number of public schools.

Selected References on Urban Planning Methods and Techniques

Department of City and Regional Planning, University of North Carolina, Chapel Hill, N. C. January 1954. Mimeo. 20 pp. $2 per copy. Checks payable to Margaret Hargett, Secretary, Box 1290, Chapel Hill, N. C.

A carefully prepared bibliography, notable for its extensive references, which concentrates on the technical aspects of planning, including the listing of these and other unpublished materials generally available only at Chapel Hill.

Other Reports Received

Administration and Government

ESSEX COUNTY, N. J.—County Government. An outline of its origin, its history, and its function today. Essex County Supervisor, Hall of Records, Newark, N. J. May 1, 1953. Illus. 108 pp.

FLORIDA — The Council-Manager Plan in Florida: Theory and Practice. Public Administration Clearing House, University of Florida, Gainesville, Fla. Civic Information Series No. 16. 1953. 15 pp.

NEW YORK, N. Y.—The City Gets a Check-up. A summary of the reports of the Mayor's Committee on Management and the Temporary State Commission to Study the Organizational Structure of the City of New York. Citizens Union Research Foundation, Inc., 5 Beekman St., New York 38, N. Y. 1954. 15 pp.

QUEBEC, CANADA — 1954 Municipal Guide. Department of Trade and Commerce, Bureau of Statistics. 1954. 130 pp. 25 cents.

UNIVERSITY CITY, Mo.—The Government of University City: A Progress Report. Governmental Research Institute, 763 Paul Brown Bldg., St. Louis 1, Mo. No. 78. March 17, 1954. 4 pp.

GENERAL—Proceedings of the Thirteenth Annual Conference of the Western Governmental Research Association, held at the Miramar Hotel, Santa Monica, Calif., October 1-2, 1953. Office of the Secretariat, 346 Library Annex, University of California, Berkeley, Calif. Mimeo. 26 pp. $1.

Annual Reports

COLUMBIA, Mo.—1953 Annual Report on City Government. Office of the City Manager. Illus. 23 pp.

MILTON, MASS.—1953 Annual Report. 382 pp.

MONTEREY, CALIF.—The Monterey Story for the Fiscal Year Ended June 30, 1953. Second in a series of annual reports. Office of the City Manager. Illus. 35 pp.

NORTHUMBERLAND, N. H.—Annual Report of the Municipal Officers for the Fiscal Year Ending December 31, 1953. 68 pp.

UNIVERSITY CITY, Mo.—You and Your City, 1953 Annual Report. Office of the City Manager. Illus. 33 pp.

PATCHOGUE, N. Y. — 1953 Annual Report Office of the Mayor. Illus. 33 pp.

WYOMISSING, PA.—1952 Annual Report Office of the Burgess. Illus. 21 pp.

Airports

WINNIPEG, MANITOBA—The Relationship of Stevenson Field to Urban Development in Greater Winnipeg. Prepared by the Metropolitan Planning Commission, 301 Mitchell-Copp Bldg., Winnipeg, Manitoba. December 1953. Mimeo. Map. 23 pp.

Citizens and Government

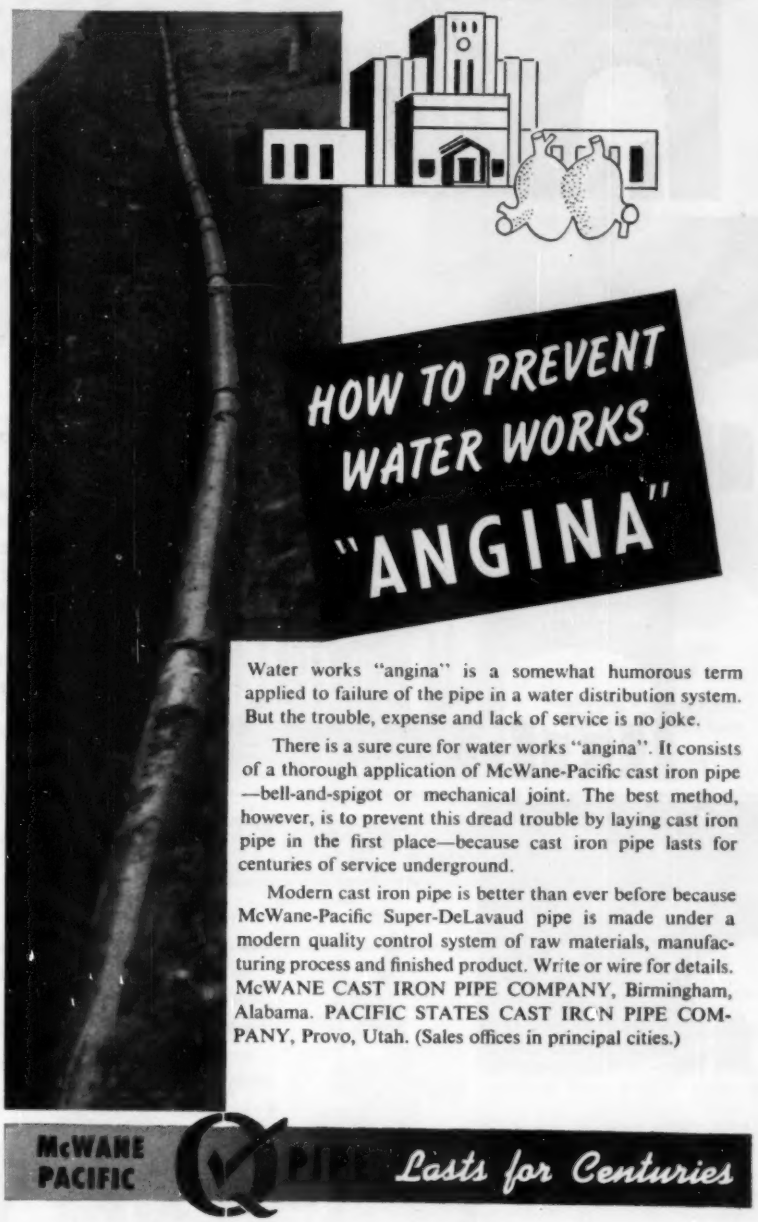
TEXAS—A Handbook for Texas Voters. Revised Edition published by The Institute of Public Affairs, The University of Texas, Austin, Texas. Illus. Graphs. Tables. 1952. 53 pp. 50 cents.

Finance and Taxation

DALLAS, TEXAS — Annual Financial Statement for the Fiscal Year October 1, 1952-September 30, 1953. Office of the City Auditor. January 1954. 109 pp.

EAST ST. LOUIS, ILL.—1953 Comptroller's Report. Mimeo.

EAU CLAIRE, WIS.—Financial Report for


HOW TO PREVENT
WATER WORKS
"ANGINA"
Water works "angina" is a somewhat humorous term applied to failure of the pipe in a water distribution system. But the trouble, expense and lack of service is no joke.
There is a sure cure for water works "angina". It consists of a thorough application of McWane-Pacific cast iron pipe —bell-and-spigot or mechanical joint. The best method, however, is to prevent this dread trouble by laying cast iron pipe in the first place—because cast iron pipe lasts for centuries of service underground.
Modern cast iron pipe is better than ever before because McWane-Pacific Super-DeLavaud pipe is made under a modern quality control system of raw materials, manufacturing process and finished product. Write or wire for details. McWANE CAST IRON PIPE COMPANY, Birmingham, Alabama. PACIFIC STATES CAST IRON PIPE COMPANY, Provo, Utah. (Sales offices in principal cities.)
McWANE PACIFIC
PIPE
Lasts for Centuries

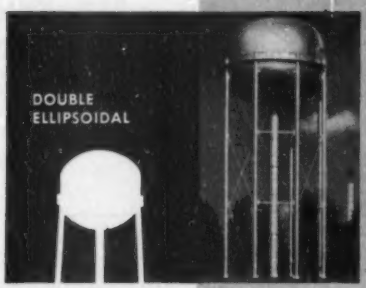
PITTSBURGH · DES MOINES

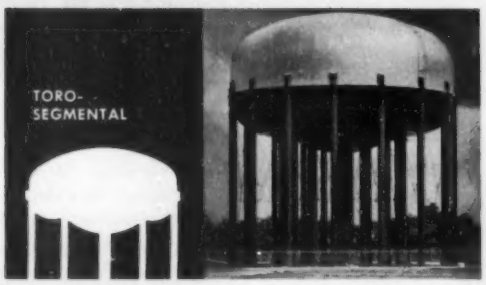
designs, fabricates and erects

every type

of ELEVATED STEEL TANK

for every WATER STORAGE need





The widely-varying water storage requirements of American communities are covered effectively by the broad range of Pittsburgh-Des Moines Elevated Steel Tanks available today. For every consideration of capacity, appearance, service, and cost, a corresponding answer is found in our standard and special elevated tank construction. Consult us on your water storage problems—our more than fifty years of experience in this field are at your service, without obligation.

Send for our helpful 20-page brochure, "Modern Water Storage in Elevated Steel Tanks" — free, complete, informative!

PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH (25) ..... 3412 Neville Island	DES MOINES (8) ..... 913 Tuttle Street
NEWARK (2) ..... 215 Industrial Office Bldg.	DALLAS (1) ..... 1217 Praetorian Bldg.
CHICAGO (3) .. 1216 First National Bank Bldg.	SEATTLE ..... 520 Lane Street
LOS ANGELES (48) ..... 6399 Wilshire Blvd.	SANTA CLARA, CAL. ..... 619 Alviso Road

STEEL RESERVOIRS

If you are interested in water storage at natural elevations, write for our illustrated "Steel Reservoirs" Bulletin, sent gladly on request.

AISC

the Year Ended December 31, 1953. Office of the City Manager. Mimeo. 44 pp.

GLENCOE, ILL. — A Word About Your Tax Bill. An aid to understanding the new property tax bills in that city. March 23, 1954.

HARRIS COUNTY, TEXAS — Analysis of the 1954 Harris County Budget. A survey report of the Tax Research Association, of Houston and Harris County, Inc. March 1954. Mimeo. 26 pp.

LITTLE ROCK, ARK.—Statement of Financial Information. Report of the City Clerk. 1953. Illus. 48 pp.

MICHIGAN—Papers on Municipal Nonproperty Taxes in Michigan. Papers in Public Administration No. 10. Bureau of Government, Institute of Public Administration, University of Michigan. 1954. Available from The University Press, 311 Maynard St., Ann Arbor, Mich. 94 pp. $2.

MULTNOMAH COUNTY, ORE.—1952-53 Annual Report of the Tax Supervising and Conservation Commission, 435 County Courthouse, Portland 4, Ore. 114 pp.

GENERAL—Finances of Selected States in 1953. G-SF53-No. 3. 19 pp. For sale by the Bureau of the Census, Washington 25, D. C. 15 cents per copy.

——Payroll Deductions Made by Municipalities. Published by Municipal Finance Officers Association of the United States and Canada, 1313 E. 60th St., Chicago 37, Ill. Special Bulletin 1954A. March 1954. 4 pp. 50 cents.

——State Payments to Local Governments in 1952. United States Department of Commerce, Bureau of the Census. State and Local Government Special Studies No. 35. 1954. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Paper cover, 45 cents.

——Tax Institute Bookshelf. Nos. 39-40, September-December 1953. Tax Institute, Inc., 457 Nassau St., Princeton, N. J. Single copies, $2.

Noise Abatement

GENERAL—Proceedings of the Fourth Annual Noise Abatement Symposium, October 23-24, 1953. National Noise Abatement Council, 9 Rockefeller Plaza, New York, N. Y. 110 pp. $1.

Parks and Recreation

FLORIDA — Swimming Pools and Bathing Beaches. Proceedings of the Sixth Florida Public Health Engineering Conference, March 24-25, 1953. Florida Engineering and Industrial Experiment Station, College of Engineering, University of Florida, Gainesville, Fla. Bulletin Series No. 62. September 1953. 55 pp.

WASHINGTON—Suggested Park and Recreational Ordinances: Park Boards and Departments. Association of Washington Cities, 250 Smith Hall, University of Washington, Seattle 5, Wash. Information Bulletin No. 165. March 15, 1954. 35 pp.

Planning, Housing, and Zoning

ATHENS, GREECE — Speculations on Town Planning by Paul Kriesis. Printed by G. S. Christou, 7 Gambeta St., Athens, Greece. 1953. 53 pp.

CHICAGO, ILL. — Residential Construction. Office of the Housing and Redevelopment Coordinator, 69 W. Washington St., Chicago 2, Ill. Tables. Charts. Unpaged. 1953.

DELAWARE COUNTY, PA.—1953 Annual Re-

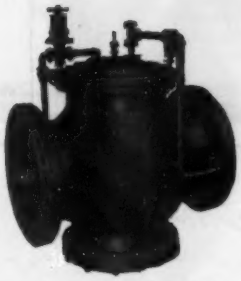
IF YOU HAVE EXPERIENCED

Water Shortage—Surge—Unnecessary Waste

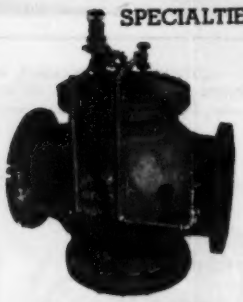
INSTALL ROSS VALVES FOR CONTROL OF WATER STORAGE, SUPPLY CONDUIT AND DISTRIBUTION PRESSURES

ROSS SINCE 1879

MANUFACTURERS OF AUTOMATIC HYDRAULIC CONTROL VALVES AND SPECIALTIES



PRESSURE REDUCING VALVE



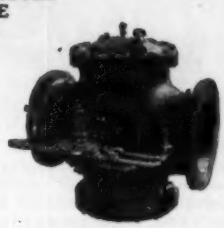
SURGE RELIEF OR BACK PRESSURE VALVE

OTHER ROSS PRODUCTS:

FLOAT VALVES
STRAINERS

HYDRAULIC BOOSTER PUMPS FOR CHLORINE FEED

HYDRAULIC AND ELECTRIC CONTROLLED VALVES



ALTITUDE VALVE

ROSS VALVE MFG. CO. INC.

8 Oakwood Ave. Troy, N. Y.

BAVIN GLASS BEAD DISPENSER

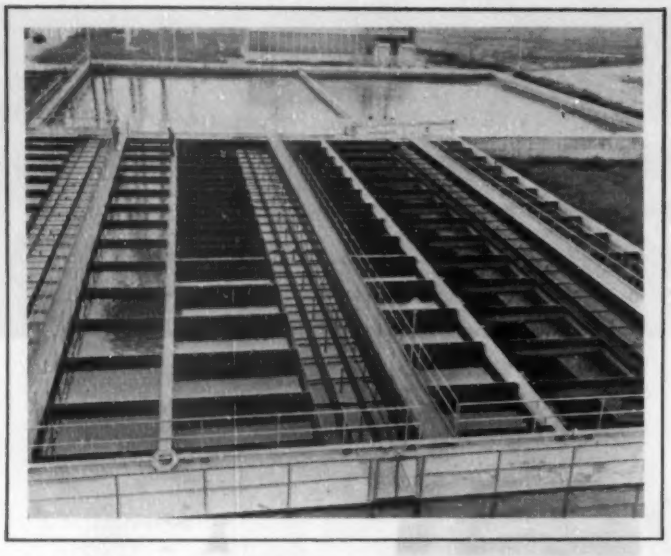
For Street, Highway and Airport Marking

Easily attached to any striping machine, the BAVIN dispenser distributes glass beads on any width strip (solid or skip line) from 2" to 6". Beads are dispensed **automatically** regardless of speed of travel. Power and metering are derived from friction pulley engaging wheel of striping machine. A single power unit operates from 1 to 3 dispensers.

OWN YOUR OWN BEAD DISPENSER

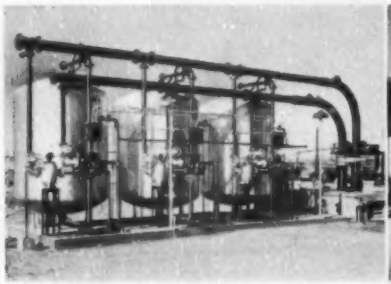
Write for circular

G. D. BAVIN CO. 2500 WEST SIXTH STREET BUILDING LOS ANGELES 57, CALIFORNIA



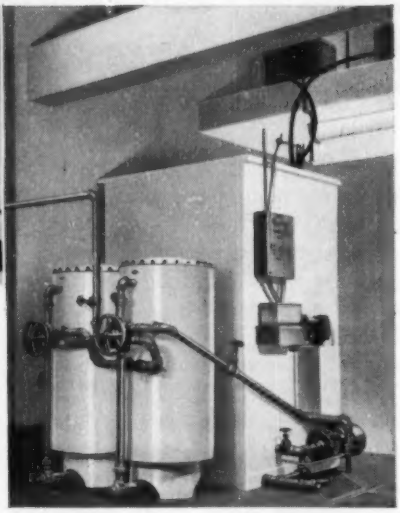
PRECIPITATOR. Coagulation, precipitation and settling in one operation! Minimum space . . . stable effluent. Reduces turbidity, color, taste, odor, hardness, iron, manganese, alkalinity, silica.

WHICH Permutit Process will solve YOUR water problem?



ZEOLITE (Ion Exchange) SOFTENERS remove total hardness. Reduce iron and manganese. Permutit multiport-valve control is fully automatic! Saves operator's time . . . increases efficiency.

FILTERS. Rapid type gravity filters in concrete or steel. Vertical or horizontal pressure filters. Manual or fully automatic multiport-type control for single units or batteries.



PACKAGE WATER CONDITIONING PLANT. Reduces organic matter, turbidity, taste, odor, hardness, iron, manganese, alkalinity. Compact . . . ideal for small municipalities. Flow rates up to 50 gpm.

Permutit can help you decide...

PERMUTIT will make a free analysis of your city's water supply and make recommendations to you or your consultants. Remember—only Permutit manufactures both ion exchangers and all types of water conditioning equipment.

Write today for information on municipal water conditioning equipment. The Permutit Company, Dept. AC-5, 330 West 42nd Street, New York 36, N. Y.

Water Conditioning Headquarters for Over 40 Years

PERMUTIT®

port. Delaware County Planning Commission, Court House, Media, Pa. Information Bulletin 3. January 1954. 4 pp.

——Population Characteristics. Delaware County Planning Commission, Court House, Media, Pa. Information Bulletin 4. February 1954. Tables, Charts. Maps. 20 pp.

HAYWARD, CALIF. — A Master Plan for Future Redevelopment. Planning Commission, City Hall, Hayward, Calif. March 1, 1954. 97 pp. $1.50.

OAKLAND, CALIF.—1952-1953 Annual Report. City Planning Commission. October 1953. 40 pp.

PHILADELPHIA, PA.—New Thresholds. 1953 Report of The Philadelphia Housing Authority, Robinson Bldg., 15th and Chestnut Sts., Philadelphia 2, Pa. March 29, 1954. Illus. 44 pp.

ST. CLAIR COUNTY, MICH.—We the People of St. Clair County. County Planning Commission, City Hall, Marysville, Mich. 29 pp.

WASHINGTON — Zoning Administration and Enforcement. Association of Washington Cities, 250 Smith Hall, University of Washington, Seattle 5, Wash. Information Bulletin No. 164. February 15, 1954. 29 pp.

GENERAL—Application of Climatic Data to House Design. Housing and Home Finance Agency, Division of Housing Research. January 1954. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.

——Open Occupancy in Public Housing. Public Housing Administration, Housing and Home Finance Agency, 1953. For sale by the Superintendent of Documents, Goverment Printing Office, Washington 25, D. C. 20 cents.

Public Health

NEW YORK—Institutes on Administration in Public Health: Part II Program Planning in Public Health. A report of the Proceeding of Institutes at Cooperstown, N. Y., April 20-22, 1953, June 11-12, 1953. New York State Department of Health, Albany, N. Y.

Refuse

WASHINGTON—Garbage Collection and Disposal: Methods and Practices in Washington Cities. Association of Washington Cities, 250 Smith Hall, University of Washington, Seattle 5, Wash. Information Bulletin No. 163. February 1954. 38 pp.

Shopping Centers

ALEXANDRIA, VA.—Prince Street Shopping Center Redevelopment Plan. Alexandria Redevelopment and Housing Authority, Alexandria, Va. Illus. 24 pp.

Water

AUBURN, MAINE — Annual Report of the Trustees and Officers of the Auburn Water District For the Year Ending December 31, 1953. 27 pp.

NEW ENGLAND—1953 Annual Report. New England Interstate Water Pollution Control Commission, 73 Tremont St., Boston 8, Mass. Illus. 31 pp.

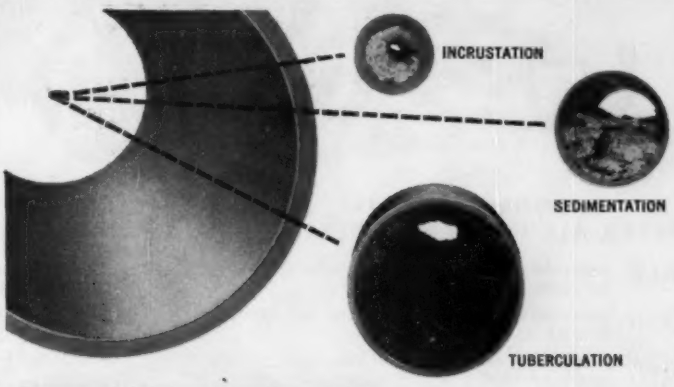
Traffic

SASKATCHEWAN, CANADA—Annual Report of the Department of Highways and Transportation for the Fiscal Year 1952-1953, Ended March 31, 1953. Minister of Highways and Transportation, Regina, Saskatchewan, Canada. 75 pp.

Freedom Under the Bill of Rights

IT IS A SAMPLE of gross immorality for me to claim freedom to vote, if I am not ready to allow my fellow Americans that privilege. It is ungodly for me to claim religious freedom, if I am unwilling to tolerate beliefs which differ from mine. It is deceitful to declare freedom of the press, if I intend to deny that freedom to others, and it is hypocrisy for me to declare freedom of opinion, if I will not grant equal freedom to those who oppose me.

[From the prize-winning essay by Miss Helena M. Carter, 18-year-old high-school senior of Atlanta, Ga., in a nationwide contest sponsored by the National Association of Real Estate Boards; presented at the annual meeting of that organization in Washington, D. C., February 3, 1954.]



NATIONAL KNOW-HOW PAYS!

National knows how to work quickly reducing supplementary labor costs and service interruptions.

National knows how to clean the difficult jobs, including hard incrustations, unusual obstructions and pipes of unusually large or small diameter.

National knows how to clean long runs with a minimum number of pipe entries.

National knows how to avoid trouble, such as can occur from improper provision for drainage of flush water from large mains or from the use of excessive pressures.

National knows how to clean so thoroughly that restoration of 95% of the original pipe capacity is guaranteed.

National Know-How comes from over 40 years of experience cleaning water mains.

Write or call today for information and prices.

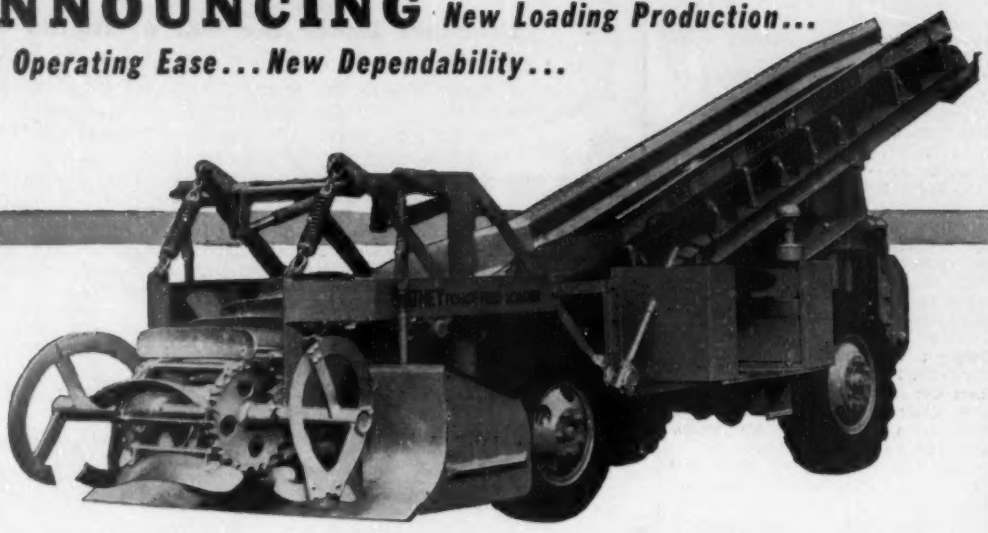
NATIONAL WATER MAIN CLEANING COMPANY
50 Church Street · New York, N. Y.

ATLANTA, GA; 333 Candler Building • BERKELEY, CALIF; 905 Grayson Street • DECATUR, GA; P.O. Box 385 • BOSTON, MASS; 115 Petersboro Street • CHICAGO; 122 So. Michigan Avenue • ERIE, PA; 439 E. 6th Street • FLANDREAU, S.D; 315 N. Crescent Street • KANSAS CITY, MO; 406 Merchandise Mart and 2201 Grand Avenue • LITTLE FALLS, N.J; Box 91 • LOS ANGELES; 5075 Santa Fe Avenue • MINNEAPOLIS, MINN; 200 Lumber Exchange Building • RICHMOND, VA; 210 E. Franklin Street • SALT LAKE CITY; 149-151 W. Second South Street • SIGNAL MOUNTAIN, TENNESSEE; 204 Slayton Street • MONTREAL, CANADA; 2032 Union Avenue • WINNIPEG, CANADA; 576 Wall Street • HAVANA, CUBA; Lawrence H. Daniels, P.O. Box 531 • SAN JUAN, PUERTO RICO; Luis F. Caratini, Apartado 2184.

34

ANNOUNCING *New Loading Production...*

New Operating Ease...New Dependability...



ONLY THE 7-11 OFFERS ALL THESE NEW FEATURES...

- **NEW** heavy-duty 101 HP 6-cylinder industrial engine for power!
- **NEW** heavy-duty 2-speed axle to match job needs — in loading or traveling!
- **NEW** heavy-duty cooling system with large radiator and blower fan!
- **NEW** simplified controls — make operation fast, easy, trouble-free!
- **NEW** tire size — for traction in soft footing!
- **NEW** versatility — switch from stockpile to windrow loading in minutes!

PLUS THESE WORK-PROVED STANDARD FEATURES...

- **BIG** capacity — load up to 10 cubic yards a minute in loose materials . . . to 20 cu. yd. per min. in snow!
- **MATCH** your work — pick a basic windrow or stockpile feeder!
- **FULL-FLOATING FEEDER** an exclusive Athey feature, feeder blades rise and fall to follow the contour of material . . . there's no bulldozing or submerging!
- **MONEY-SAVING SPEEDS** —load from 0.26 to 1.74 MPH . . . travel up to 20.0 MPH!

THE NEW ATHEY 7-11 FORCE-FEED LOADER

Here's the *first* belt loader that has every feature you've ever wanted . . . here's the *first* loader that has the strength and quality construction to guarantee trouble-free work schedules . . . here's the *first* loader designed with the operator in mind to eliminate fatigue and keep production high from 8 to 5 . . . *here's the new Athey 7-11 Force-Feed Loader!*

Into the design of the 7-11 has been incorporated every money-saving feature of the preceding Athey Loaders, plus many new features — proven in action — that increase production capacity and assure steady, uninterrupted operations.

Some of the features of the 7-11 are detailed on this page, but you will have to see them in action to see how they can save you money and boost your production. Ask your Athey-Caterpillar Dealer to arrange a demonstration or write direct to . . .

You can choose the feeder arrangement that fits your needs — the Bulldozer-Moldboard-Auger Feeder, shown above, provides 90" gather width for basic stockpile work. Sideboards may be reversed for windrow loading. The basic Windrow Loader front end, shown at right, has a Tapered Moldboard Feeder with 84" gather width.

Athey PRODUCTS CORPORATION
5631 West 65th Street,
Chicago 38, Illinois

Athey *... Led with the FIRST Force-Feed Loader...*
... Still Leads with the NEW Force-Feed Loader

"Fight-Blight" Plans

(*Continued from page* 15)

servation Agencies and Organizations (in Chicago) Concerned with Conservation; Conservation Activities in Other Cities.

Vol. II. — Woodlawn–Hyde Park–Kenwood: A Case Study in Physical Planning and Costs of Conservation; Decatur and Evanston, Preliminary Case Studies.

Vol. III.—Legal Possibilities for Conservation; Financial Possibilities; Organizational Possibilities;; Draft of Conservation Authorities Act.

The Role of the Church in Community Conservation. The Church Federation of Greater Chicago, 77 W. Washington St., Chicago, Ill., with the cooperation of the Office of the Housing and Redevelopment Coordinator, 69 W. Washington St., Chicago 2, Ill. 1954. 10 pp.

Assistantships in City Planning at U. of N. C.

THE Department of City and Regional Planning of the University of North Carolina has announced a limited number of graduate assistantships in city planning for the year 1954-1955. Preference will be given to persons holding a bachelor's degree in architecture, economics, engineering, geography, landscape architecture, political science, or sociology. Awards will be announced early in June 1954. Inquiries should be addressed to the Department of City and Regional Planning, University of North Carolina, Chapel Hill.

Enforcement Officials In TV Programs

TO SUPPLEMENT their training programs for young people interested in municipal jobs, several organizations have used films from the CBS-TV series, "The Man Behind the Badge," an anticrime show based on authentic incidents involving various municipal and other law-enforcement officers.

Telecasts concerning a New York arson detective and a Florida building inspector have been of particular interest to training groups. The Schuyler-Tomkins-Seneca Volunteer Firemen's Association of Mecklenburg, N. Y., for example, requested a film detailing the work of Sergeant Detective Charles L. Haggerty, chief of the Arson Squad in Buffalo, N. Y. It was shown at their association meeting to portray the problems and techniques peculiar to this important municipal job. The same film was requested by the Watkins Glen (N.Y.) Fire Department for showing at the 61st annual convention of the Central New York Firemen's Association.

Gratified by the unprecedented salute to a usually neglected job, the building inspector in Youngstown, Ohio, asked for a "Man Behind the Badge" kinescope dramatizing the work of Florida Building Inspector, W. A. Childres.

Edgar Stehli, in the role of Florida Building Inspector W. A. Childres takes notes as he listens to the hard-luck story of a building contractor, played by Will Scholz in a CBS telecast of "The Man Behind the Badge."

Your Biggest Water Supply BARGAIN

This is a Filter Plant

For story see THE AMERICAN CITY, *Oct.* 1953

It draws water from a river, filters it, frees it from impurities, bad tastes and odors, and delivers sparkling-clear and wholesome water, ready for domestic consumption.

But it doesn't - - require an expensive filter plant building, costly chemicals or chemical handling facilities.
- - - need expensive settling basins.
- - - demand the services of a large crew of skilled operators.
- - - require costly filter beds and backwashing arrangements.

What's the secret?

By a geological study, we find a formation near a river or lake, that is, in effect, an unsurpassed filter plant, built by Mother Nature. Then we sink one of our specially designed large-diameter Caisson Wells into this formation and get naturally filtered water at a cost that the conventional, man-made filter plant cannot possibly approach.

Would you like details about these Caisson Wells, supplied you free? Fill in the enclosed coupon and we'll be glad to forward them by return mail. You probably have one of these natural filter beds close by. Why not take advantage of it?

CAISSON WELLS, INC.

Ground Water Engineers and Contractors

33 West 42nd Street
New York 36, New York

Caisson Wells, Inc., 33 W. 42nd St., New York 36, N. Y.

Yes, I'd like to know about your low-cost Caisson Well systems.

☐ Send me details plus case histories on successful installations.

☐ Please ask one of your engineers to call and discuss our water problem

Signed .....
Title .....
Municipality .....
State .....

UNPAVED STREETS—Roads treated with SOLVAY Calcium Chloride are compact, dust-free, smooth-riding surfaces. Calcium Chloride treated roads end complaints from motorists and local residents and reduce road maintenance costs. Calcium Chloride ends dust on gravel, limestone, cinder, crushed stone and similar unpaved surfaces.

PARKING AREAS—Parking lots that are clean and dustless keep patrons happy . . . attract new customers . . . reduce complaints from residents in neighborhood and promote good public relations with taxpayers.

SCHOOLS AND PLAYGROUNDS—Play areas are kept clean, more healthful and free of germ-bearing dust. Odorless, colorless SOLVAY Calcium Chloride will not stain clothes and equipment.

Keep Unpaved Surfaces CLEAN, SMOOTH and DUSTLESS

with Low-Cost, Clean, Odorless

SOLVAY Calcium Chloride

SOLVAY Calcium Chloride is the inexpensive, efficient way to eliminate dust. This clean, odorless, economical material keeps all unpaved surfaces and adjoining areas healthful and free of germ-bearing dust.

SOLVAY Calcium Chloride is easy to use—requires no special knowledge. It can be applied quickly by regular maintenance personnel—no experience or expensive equipment is necessary.

Send for FREE BOOK

This highly informative book "END DUST" gives complete details on methods of application, quantities required, etc. It contains photos, illustrations, charts, and easy-to-follow, step-by-step instructions on how to end your dust problems.

PARKS—Dust-free walks, drives and bridle paths make parks more attractive and enjoyable to picnic groups and strollers by preserving the beauty of shrubbery, lawns and buildings. Calcium Chloride saves painting and reduces maintenance costs. Will not track or discolor surfaces upon which it is applied.

BASEBALL DIAMONDS—SOLVAY Calcium Chloride ends unsightly dust, making the game more accurate. A dustless diamond reduces sun glare and adds to enjoyment and comfort of the spectators.

TENNIS COURTS—Many of the nation's leading tournaments are held on tennis courts treated with SOLVAY Calcium Chloride. It gives the courts a compact surface . . . makes the game more accurate . . . reduces sun glare . . . makes it easier for spectators to watch and follow fast action shots.

GET THE FACTS!

Mail Coupon Now!

SOLVAY PROCESS DIVISION

Allied Chemical & Dye Corp.
61 Broadway, N. Y. 6, N. Y.

Please send me with no obligation your FREE BOOK —"END DUST with SOLVAY Calcium Chloride".

Name .....

Title .....

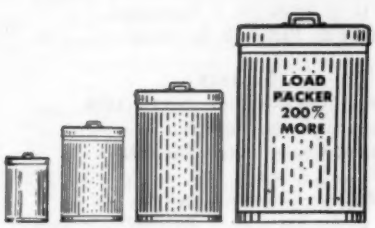
Address .....

City ..... Zone ..... State 61-5

ANOTHER GarWood ECONOMY FEATURE

SQUEEZE

REFUSE COLLECTION BUDGETS WITH LOAD-PACKER'S DOUBLE COMPACTION



A B C D

WHAT COMPACTION MEANS—

- **A** Closed body but no compaction.
- **B** Closed compaction body but no load retention.
- **C** Closed compaction body with average retention.
- **D** LOAD-PACKER body with maximum, double-acting compaction plus positive load retention.

Another big reason for Load-Packer's greater economy is the double compaction of hydraulic ram and automatic retaining panel. Twin, heavy-duty hydraulic cylinders exert up to 70,000 pounds of pressure on ram to compress refuse into a solid mass. Automatic, hydraulic retaining panel scrapes ram clean, helps ram compact, then retains compacted load under pressure in body. Double compaction of ram and retaining panel, plus positive retention under pressure, adds up to 200% extra capacity per cubic content of body.

Increased load capacity means fewer time-consuming trips to disposal point. Crew covers a larger area between disposal trips thus collecting more refuse per day. Crew idle time is minimized, collection schedules are speeded and expenditures for fuel, oil, tires and maintenance are substantially reduced.

You can step up your refuse collection schedules and reduce your operating costs by putting Gar Wood LOAD-PACKERS to work in your community. Mail the coupon below, NOW!

CHECK THESE EXTRA FEATURES:

- Larger-capacity tapered body
- Lower, wider loading hopper
- Fully-automatic finger-tip control
- Streamlined leakproof design
- Improved hydraulic dumping

Gar Wood Industries, Inc.
36014 Main St., Wayne, Michigan
Att'n: Customer Service Dept.

Please send me facts about cutting refuse collection costs with the new, 1954 Gar Wood LOAD-PACKER.

Name_____

Position_____

Address_____

City_____ Zone___ State____

GAR WOOD GW INDUSTRIES

GAR WOOD INDUSTRIES, INC.

WAYNE, MICHIGAN

TRUCK EQUIPMENT: Dump Truck Bodies and Hoists, Winches and Cranes, Refuse Collection Bodies, Elevating End-Gates. CONSTRUCTION EQUIPMENT: Excavators, Scrapers, Dozers, Ditchers, Spreaders, Finegraders, Truck-Mounted Road Graders.

Members of Water & Sewage Works Manufacturers Association

together with year of joining the organization

Alabama Pipe Company—Anniston, Ala.—**1952**
Albert Pipe Supply Co., Inc.—Brooklyn, N. Y.—**1947**
Allis-Chalmers Mfg. Co.—Milwaukee, Wis.—**1909**
American Car and Foundry Company — Valve Division — Detroit, Mich.—**1953**
American Cast Iron Pipe Co.—Birmingham, Ala.—**1912**
A. J. Herrmann, J. B. Hill, L. C. Parnell, W. R. Blair, Claude R. Brown
American Foundry & Mfg. Co.—St. Louis, Mo.—**1909**
American Lumber & Treating Co.—Los Angeles, Calif.—**1950**
American Oil & Supply Co.—Newark, N. J.—**1950**
American Pipe & Construction Co.— Los Angeles, Calif.—**1933**
The American Well Works—Aurora, Ill.—**1942**
G. E. Hauer, Carl F. Noel, C. J. Murray, John H. L. Miller, Ben H. Browne
Armco Drainage & Metal Products, Inc.— Middletown, Ohio—**1929**
Claude Faw, W. A. Bardin, M. H. Bailey, Marvin Ambuhl, George Paterson, Russell Barnard, Thomas Bell, R. C. Beam, W. H. Withey
The Atlas Mineral Products Co.—Mertztown, Pa.—**1929**
Kenneth T. Synder, Donald F. Deakin
Automatic Pump & Softener Corp.—Rockford, Ill.—**1952**
James E. Dymond
E. W. Bacharach, Inc.—Kansas City, Mo.—**1943**
Thomas C. Hersey
Backflow Engineering & Equipment Co.— Frank Carlton Los Angeles, Calif.—**1939**
Badger Meter Mfg. Company—Milwaukee, Wis.—**1909**
J. O. Wright, J. E. Johnston, Ross J. Burns, Henry De Pagter, Arthur Crooke, R. S. Walters, T. E. Greenleaf, W. C. Whipple, Robert F. Yellam
R. H. Baker & Company, Inc.—Huntington Park, Calif.—**1941**
Edward H. Schustack, R. S. "Sheb" McGhie
The Barrett Division, Allied Chemical & Dye Corp.— New York, N. Y.—**1937**
B. C. Cowart, F. J. O'Leary, E. C. Maxwell
Basalt Rock Company, Inc.—Napa, Calif.—**1950**
B-I-F Industries, Inc.—Providence, R. I.—**1909**
G. W. Kelsey, J. R. Hartley, R. W. Pearce, M. E. Rogers, L. E. Harper, P. A. Coffman, R. J. Leveque, C. G. Haire, H. N. Armbrust, T. F. Sheehan, Jr.
Bingham & Taylor Corporation—Culpepper, Va.—**1928**
Brooks Products, Inc.—Pasadena, Calif.—**1927**
Buffalo Meter Company—Buffalo, N. Y.—**1908**
H. F. Barrett, John H. L. Miller, C. J. Murray, J. D. Angie, Jack Murray, Don Barclay, Joe Fasekas, Sam Crowell, Larry Blum, H. L. Mills, C. L. Blanchard
Burroughs Adding Machine Co.—Detroit, Mich.—**1948**
A. Knaff
Byron Jackson Co.—Los Angeles, Calif.—**1952**
Calgon, Inc.—Pittsburgh, Pa.—**1939**
John P. Kleber, J. R. Sheridan, Ralph T. Manion, Frank W. Richardson
Ralph B. Carter Company—New York, N. Y.—**1941**
John J. Horgan
Central Foundry Company—Newark, N. J.—**1919**
Centriline Corporation—New York, N. Y.—**1940**
J. P. Cummins, A. G. Perkins
Chain Belt Company—Milwaukee, Wis.—**1941**
R. T. Steindorf, W. F. Nichols, H. F. Bergis
Chapman Valve Mfg. Co.—Indian Orchard, Mass.—**1909**
Chicago Bridge & Iron Company—Chicago, Ill.—**1909**
H. F. Stearns, E. D. Barrett, Marvin Mitchell, E. E. Alt, J. G. Daniels, D. E. Stephan, L. A. Elsener, R. A. Jackson, L. Hollmeyer
Chicago Pump Co.—Chicago, Ill.—**1940**
H. W. Clark Company—Mattoon, Ill.—**1943**
Cla-Val Co.—Alhambra Calif.—**1950**
D. G. Griswold, H. B. Pearce, Grover H. Smith, J. R. Carpenter, F. W. Peterson, Raymond A. Lund, Fred K. Wyckoff, Miles M. Chard
James B. Clow & Sons—Chicago, Ill.—**1918**
Eddy Valve Company—Waterford, N. Y.—**1915**
Iowa Valve Company—Chicago, Ill.—**1925**
George P. O'Day, Warren Whitney, Harry Bower, Richard Michaels, Henry Skibbe, V. M. Wall, Cecil Forbes, M. T. Bramman
Cochrane Corporation—Philadelphia, Pa.—**1950**
Columbia-Southern Chemical Corp—Pittsburgh, Pa.—**1948**
Combustion Engineering, Inc.—Flash Dryer Division— Chicago, Ill.—**1951**
Consolidated Western Steel Division— United States Steel Corp.—San Francisco, Calif.—**1928**
Walter H. Cates, J. C. McPherson, George E. Boyd, Richard B. Hay, Hanford Haynes, Charles E. Wilson
Culligan, Inc.—Northbrook, Ill.—**1943**
Darling Valve & Mfg. Co.—Williamsport, Pa.—**1919**
Davis Manufacturing Co.—Beverly Hills, Calif.—**1951**
David G. Davis, David H. Davis, Harold W. Ramey, Daniel B. Mange
De Laval Steam Turbine Co.—Trenton, N. J.—**1917**
C. E. Cromwell, C. E. Coleman, J. A. Greenland, D. T. Bixby, Richard Collins
The Dorr Company Inc.—Stamford, Conn.—**1920**
R. S. Rankin, R. P. Logan, A. L. Morris, W. E. Budd, C. M. Comstock, W. A. Darby, O. V. Lindell, E. C. Cardwell, F. G. Nelson, E. D. Thoits, T. A. Binford, G. R. Smith
Dresser Manufacturing Division—Bradford, Pa.—**1930**
Dresser Industries, Inc.
H. P. Boncher, H. Z. Hight, N. J. Thompson, Arthur Hicks, John E. Parker, S. B. Hodges, George Kish
The Elmco Corp.—Chicago, Ill.—**1943**
Electro Rust-Proofing Corp.—Newark, N. J.—**1939**
Frank P. Macdonald, D. N. Sullivan
Everson Manufacturing Co.—Chicago, Ill.—**1939**
M. S. Campbell, C. S. Olsen
Fairbanks, Morse & Co.—Chicago, Ill.—**1908**
J. C. Elmburg, R. D. Wells, R. J. Reynolds, G. H. Hammond
The Farnan Brass Works Co.—Cleveland, Ohio—**1913**
Fischer & Porter Co.—Hatboro, Pa.—**1951**
Kermit Fischer, P. E. Sellers, P. T. Charest, Jack Burke, John Hull, D. V. Gayton
Fisher Research Laboratory—Palo Alto, Calif.—**1938**
Gerhard R. Fisher, Curt R. Fisher, E. A. Feichtmeir, George M. McLeod
Flexible Sales Corp.—Los Angeles, Calif.—**1938**
The Ford Meter Box Co.—Wabash, Ind.—**1911**
Holton N. Ford, John L. Ford, Sr., John H. Ford, John L. Ford, Jr., David J. Ford
George P. Forni—Oakland, Calif.—**1942**
George P. Forni, John J. Minahan
Foster Engineering Co.—Union, N. J.—**1953**
George Bauer, Vincent Gentile, Jr.
The Foxboro Co.—Foxboro, Mass.—**1953**
General Chemical Division, Allied Chemical & Dye Corp. —Edgewater, N. J.—**1909**
R. W. Ockershausen, S. A. Russell, W. L. Hoefling
General Electric Company—Schenectady, N. Y.—**1941**
H. R. Wallrath, J. S. Lester, R. P. Grady

and Manufacturers' Representatives Booked for the Seattle Convention of The American Water Works Ass'n

May 23 to 28, 1954

General Filter Company—Ames, Iowa—**1951**
M. H. Anderson, Joseph P. Lawlor
General Laboratory Supply Co.—Paterson, N. J.—**1952**
General Paint Corporation—Hill, Hubbell & Co. Division—Cleveland, Ohio—**1938**
Gifford-Hill-American, Inc.—Dallas, Tevas—**1950**
Glamorgan Pipe & Foundry Co.—Lynchburg, Va.—**1912**
Neil Hammerstrom, Frank Grossman
Golden-Anderson Valve Specialty Co.—Pittsburgh, Pa.—**1950**
Grant A. Colton, Ralph L. Stemler
Graver Water Conditioning Co.—New York, N. Y.—**1950**
M. Greenberg's Sons—San Francisco, Calif.—**1928**
Stuart N. Greenberg, Elmer K. Ross, U. A. Fabris, R. E. Chandler, Wayne S. Jaynes, Herbert F. Gendron
Gruendler Crusher & Pulverizer Co.—St. Louis, Mo.—**1941**
Hammond Iron Works—New York, N. Y.—**1952**
Ralph E. Kramer, Dale Hardy
The Fred W. Hanks Company—Cleveland, Ohio—**1926**
Harco Corporation—Rusta Restor Div.—Cleveland, O.—**1940**
Hardinge Company—York, Pa.—**1944**
Hayes Pump and Machinery Co.—Somerville, Mass.—**1946**
Hays Manufacturing Co.—Erie, Pa.—**1908**
John D. Clemens, Herman S. Peterson, Allen Green
Hersey Manufacturing Co.—South Boston, Mass.—**1908**
W. A. Hersey, W. P. Hersey, F. P. Hersey, W. C. Sherwood, W. B. Cambridge, J. F. Fuller, W. O. Weight, M. H. Foley, W. E. Pebworth, W. B. Pebworth, B. D. Hubley, J. B. Schroeder, G. A. Leiding, E. G. Carder, J. H. Snellgrove
Hilco Supply Company—South Sudbury, Mass.—**1950**
Homelite Corporation—Port Chester, N. Y.—**1936**
A. D. Sherwood, Guy E. Sabin, Gordon Forsythe
Homestead Valve Mfg. Co.—Corapolis, Pa.—**1954**
Hooker Electrochemical Co.—Niagara Falls, N. Y.—**1923**
J. B. Sutherland, R. O. Vognild, J. B. Ward
Hydraulic Development Corp.—New York, N. Y.—**1928**
Reginald F. Hayes, Herbert B. Crowell, Thomas Finley, Jerry D. Angie
Industrial Chemical Sales Division—West Virginia Pulp & Paper Co.—New York, N. Y.—**1931**
E. A. Sigworth, J. E. Drudy, J. F. Zieserl, D. C. Colebaugh, J. W. Hassler, J. G. Filicky, A. Y. Hyndshaw, H. F. Laughlin
Industrial Materials Co.—Philadelphia, Pa.—**1953**
Inertol Company, Inc.—Newark, N. J.—**1944**
Herman Knoedler, C. W. Brown, Ed Zuck
Infilco Incorporated—Tucson, Ariz.—**1922**
L. K. Cecil, E. G. Kominek, P. F. Pew, D. E. Colvin, O. F. Barklage, R. B. Banks
Jeffrey Manufacturing Co., The—Columbus, Ohio—**1940**
Johns-Manville—New York, N. Y.—**1909**
R. F. Orth, V. M. Norwood, L. F. Frazza
Johnson, Inc., Edward E.—St. Paul, Minn.—**1932**
Jones Company, James—El Monte, Calif.—**1928**
Wallace Jones, Jr., James H. Jones, Gordon A. Douglas
Keasbey & Mattison Co.—Ambler, Pa.—**1939**
A. B. Spaulding, J. H. Watrous, J. R. Reichel
Kennedy Valve Mfg. Co.—Elmira, N. Y.—**1909**
William E. Blake, Leonard E. Shaffer, Kenneth P. Shaffer, Fred G. Greaves, Fred G. Greaves, Jr.
Komline-Sanderson Engineering Corp.—Peapack, N. J.—**1952**
Koppers Co., Inc.—Tar Products Div.—Pittsburgh, Pa.—**1925**
J. E. B. Gibbons, R. C. Kenan, H. E. Crane, R. C. Stromquist, S. J. Katz, J. W. Gettman, L. P. Grover
Lakeside Engineering Corp.—Chicago, Ill.—**1941**
P. S. Wilson, H. D. Fowler, M. S. Campbell
Layne & Bowler, Inc.—Memphis, Tenn—**1939**
J. I. Seay, J. G. Gordon, III, A. O. Putnam, W. H. Reeves, W. E. Weaver
Leadite Company, Inc., The—Philadelphia, Pa.—**1910**
Leopold Co., Inc., F. B.—Pittsburgh, Pa.—**1953**
F. O. Leopold
Limestone Products Corp. of America—Newton, N. J.—**1941**
Lindsay Company, P. K.—Everett, Mass.—**1951**
Link-Belt Company—Colmar, Pa.—**1940**
Lock Joint Pipe Company—East Orange, N. J.—**1916**
C. M. Albertson, E. J. Eddy, M. M. Hirsh, H. S. Howe, C. F. Lynn, R. J. Sweitzer
Lone Star Steel Company—Dallas, Texas—**1952**
Lynchburg Foundry Company—Lynchburg, Va.—**1918**
J. C. Barksdale
McWane Cast Iron Pipe Company—Birmingham, Ala.—**1923**
W. P. Cox, C. H. Allen
M & H Valve & Fittings Company—Anniston, Ala.—**1935**
Mathieson Chemical Corporation—Baltimore, Md.—**1920**
George M. Cunningham
Mine Safety Appliances Co.—Pittsburgh, Pa.—**1944**
Mississippi Lime Company—Alton, Ill.—**1952**
Minneapolis-Honeywell Regulator Co.—Brown Instrument Division—Philadelphia, Pa.—**1953**
Morse Boulger Destructor Co.—New York, N. Y.—**1946**
Morton Salt Company—Chicago, Ill.—**1948**
Motorola, Inc.—Communications & Electronics Div.—Chicago, Ill.—**1953**
Mueller Company—Decatur, Ill.—**1908**
Frank H. Mueller, Robert H. Morris, L. J. Evans, R. K. Levey, F. T. O'Dell, A. D. Parks, J. L. Logsdon, F. E. Klinck, Frank B. Miller, W. R. Augustine, W. A. Arnett, Dan R. Gannon, F. V. Martin, F. C. McCown, Richard K. Morris, Stanley B. Johnson
National Clay Pipe Mfrs. Inc.—Washington, D. C.—**1943**
National Tube Div.—U. S. Steel Corp.—Pittsburgh, Pa.—**1921**
National Water Main Cleaning Co.—New York, N. Y.—**1908**
J. A. deCamp, J. A. Frank, J. L. Hodgson, Carl F. Noel, M. B. Duke
Neptune Meter Company—New York, N. Y.—**1909**
Niagara Alkali Company—New York, N. Y.—**1940**
Nichols Engineering & Research Corp.—New York, N. Y.—**1940**
Northrop & Company—Spring Valley, N. Y.—**1945**
Pacific Flush Tank Co.—Chicago, Ill.—**1940**
Harry E. Schlenz
Pacific States Cast Iron Pipe Co.—Provo, Utah—**1928**
T. L. Johnson, J. L. Boyle, H. M. Thomas, P. N. Pope
The Pelton Water Wheel Co.—San Francisco, Calif.—**1935**
C. G. Crawford, J. B. Drab
Permutit Company, The—New York, N. Y.—**1933**
J. Kneale, Dale Bumstead, Jr., O. H. Woolford, Oliver B. Lyman, A. W. Angell, Jr., R. E. Burns, G. Swem, D. M. McKee, H. G. Taylor, W. H. Mitchell, H. P. Sherwood, E. J. Connelley, Jr., D. J. Saunders
Pipe Linings, Inc.—South Gate, Calif.—**1951**
R. C. Sargent, B. A. Espiau, Austin Joy
The Pitometer Associates, Inc.—New York, N. Y.—**1909**
E. D. Case, C. R. Bird
Pittsburgh-DesMoines Steel Co.—Pittsburgh, Pa.—**1914**
J. E. O'Leary, I. A. Bickelhaupt, F. W. DeKlotz, H. D. Fowler, H. M. Howard, Herbert Miller, H. W. Ford, R. H. Beck, T. W. Fauntleroy
Pittsburgh Pipe Cleaner Co.—Newark, N. J.—**1946**
Joseph G. Pollard Co.—New Hyde Park, L. I., N. Y.—**1941**

(Continued on page 226)

Portland Cement Association—Chicago, Ill.—**1940**
C. T. Grant

Henry Pratt Company—Chicago, Ill.—**1952**
W. J. Woolley, R. P. Saar, L. C. Van Moll, J. J. O'Reilly

The Preload Construction Corp.—New York, N. Y.—**1946**
E. H. Thwaits, Robert Choate

H. R. Prescott & Sons—Worcester, Mass.—**1946**

Price Brothers Company—Dayton, Ohio—**1949**
Harry S. Price, Jr., William A. Gonsior,
Paul L. Osweiler, Ralph D. Saltmarsh

Red Hed Manufacturing Company—Boston, Mass.—**1924**

Reliable Iron Foundry, Inc.—Los Angeles, Calif.—**1952**

Rensselaer Valve Company—Troy, N. Y.—**1908**
L. C. Thunfors, E. A. Rutledge, Richard V. Klikunas,
Kimball Blanchard, Charles H. Evans, H. C. Lawson,
H. G. Roberts, E. N. Hallgren, Cecil A. Brown,
R. W. Peeples, Warren Hallgren, Harold Basel

Rich Manufacturing Company—Los Angeles, Calif.—**1935**

Roberts Filter Mfg. Company—Darby, Pa.—**1918**
Charles V. Roberts, J. A. Thomas

Rockwell Manufacturing Co.—
Pittsburgh Equitable Meter Div.—Pittsburgh, Pa.—**1908**
National Meter Division—Brooklyn, N. Y.—**1909**
W. F. Rockwell, W. F. Rockwell, Jr., L. A. Dixon,
L. A. Dixon, Jr., P. C. Kreuch, H. Boezinger,
R. B. Kitzmiller, A. L. Pelusi, A. R. Whittaker,
J. F. O'Grady, W. F. Gulley, R. L. Ford, W. H. Johnson,
E. W. Bixby, J. G. Hoyt, M. J. Harper, T. P. Gallagher,
K. G. Myrberg, R. Z. Hague, J. R. Dickerson,
M. F. Shappard, G. R. Pike, J. W. Spencer

Ross Valve Mfg. Co., Inc.—Troy, N .Y.—**1909**
William F. End

Royer Foundry & Machine Co.—Kingston, Pa.—**1940**

L. A. Salomon & Bro.—New York, N. Y.—**1936**

Sherman Products, Inc.—Royal Oak, Mich.—**1954**

Simplex Valve & Meter Co.—Philadelphia, Pa.—**1909**
E. M. Jones, F. E. Gerlitz

M. B. Skinner Company—South Bend, Ind.—**1942**

The A. P. Smith Mfg. Co.—East Orange, N. J.—**1908**
H. F. O'Brien, G. J. Manahan, Dan S. Vetromile,
Lowell E. Sennet, Carl F Noel

Smith-Blair, Inc.—South San Francisco, Calif.—**1941**
Telford L. Smith, Luther Smith

S. Morgan Smith Company—York, Pa.—**1934**
B. B. Smith, C. J. Wilcox, D. W. Hopkins, W. M. Marley,
J. H. Boisegrain, R. H. Bramhall, C. W. Lau, M. Pease,
M. MacDonald, J. H. Whisler

Southern Pipe & Casing Company—Azusa, Calif.—**1948**
D. A. Stromsoe, D. N. Chamberlain, J. A. Ellis,
H. V. Roese

Southern Pipe & Casting Company—Azusa, Calif.—**1948**
R. W. Sparling, H. L. Edwards, J. M. Condit, J. .W Service

Stuart Corporation—Baltimore, Md.—**1937**

Taylor Forge & Pipe Works—New York, N. Y.—**1949**

Thomson Meter Corp.—New York, N. Y.—**1909**

Traverse City Iron Works—Traverse City, Mich.—**1953**

Trinity Valley Iron & Steel Co.—Fort Worth, Texas—**1951**
C. W. Williamson

United Concrete Pipe Corp.—Baldwin Park, Calif.—**1948**

United States Pipe & Foundry Co.—Birmingham, Ala.—**1908**
C. S. Northen, C. N. Brown, T. W. McCreery,
H. L. Nelson, J. B. McFarland, J. L. Hart,
P. K. Farrington, A. R. Hausmann, R. N. Park,
P. R. Tinsley, R. E. Schulke, F. T. Manock, G. J. Bogs

The Vapor Recovery Systems Co.—Compton, Calif.—**1941**

Vogt Manufacturing Co., Inc.—Louisville, Ky.—**1925**
J. R. O'Donnell & Co.

The E. H. Wachs Co.—Chicago, Ill.—**1954**
Edward H. Wachs, Chapin Plumer

Walker Process Equipment Inc.—Aurora, Ill.—**1946**
J. D. Walker, John Sperry, W. A. Walton,
H. M. Graham, Chester Obma

Wallace & Tiernan Co., Inc.—Newark, N. J.—**1915**
William J. Orchard, F. G. Merckel, R. T. Browning,
W. A. Hockett, T. T. Quigley, R. C. Clement,
A. E. Griffin, G. C. White, K. A. Keirn,
F. H. Puckhaber, R. T. Gardner, G. Bannister

Warren Foundry & Pipe Corp.—New York, N. Y.—**1918**

Waterous Company—Saint Paul, Minn.—**1940**
Ned VanWambeke, William C. Dreher

Well Machinery & Supply Co., Inc.—Fort Worth, Texas—**1939**
R. L. McCann, M. T. Taylor, Paul R. Carlon

The Welsbach Corporation—Philadelphia, Pa.—**1953**
William W. Harmar

Westinghouse Electric Corp.—East Pittsburgh, Pa.—**1942**

R. D. Wood Company—Philadelphia, Pa.—**1908**
F. C. Harmstad, T. V. Wood, F. D. Perkins, F. V. Sohle

Worthington Corporation—Harrison, N. J.—**1909**
C. K. Hood, W. R. Leopold, D. L. Gallagher

Worthington-Gamon Meter Division—
Worthington Corporation—Newark, N. J.—**1909**
R. R. Anderson, A. K. Richardson, S. S. Small,
W. C. Flanders, W. C. Schoeppel, R. W. Ackley,
J. C. Metzger, R. A. Saylors, W. L. Tucker, R. L. Miller

Yeomans Brothers Company—Melrose Park, Ill.—**1941**

Publication Members

The American City Magazine—New York, N. Y.—**1913**
Case-Shepperd-Mann Pub. Corp.—New York, N. Y.—**1926**
Engineering News-Record—New York, N. Y.—**1909**
Public Works Magazine—New York, N. Y.—**1921**
Water and Sewage Works—New York, N. Y.—**1928**
Western City Magazine—Los Angeles, Calif.—**1936**

the
MODERN
approach
CAST IRON
CAST IRON
Cast iron pipe centrifugally cast and with mechanical joints is the most efficient and economical means of modern day distribution. Serving the industry with Super de Lavaud cast iron pipe centrifugally cast in modern long lengths with standardized Mechanical Joints, Bell and Spigot or Flanged, with or without centrifugally applied cement lining. Rugged, dependable and economical.
General Sales Offices
ANNISTON, ALABAMA
We invite inquiries to our nearest sales office
122 So. Michigan Avenue
Chicago 3, Ill.
350 Fifth Avenue
New York 1 New York
ALABAMA PIPE COMPANY
ANNISTON
ALABAMA

Purchasing News

Information for officials interested in equipment and services for the construction, operation and maintenance of municipal utilities

W. B. Greene

New officers of the Barber-Greene Co., of Aurora, Ill., include (seated, left to right): J. D. Turner, S. E. Faircloth, J. M. Spence, and E. H. Holt. Standing are (left to right): H. E. Herting, W. A. Greene, F. J. Merrill, Urban Hipp, and R. C. Heacock.

H. A. Barber

Barber-Greene Names New Officers

W. B. Greene has resigned from his position as president of the BARBER-GREENE CO., AURORA, ILL., to become chairman of the company's board of directors, according to a recent announcement. He is succeeded as president by H. A. Barber.

The firm also reports the election of nine new officers, including S. E. Faircloth, vice-president, production coordinator; E. H. Holt, vice-president, director of sales; J. D. Turner, vice-president, director of publicity and promotion; H. E. Herting, vice-president, comptroller; R. C. Heacock, vice-president, director of publicity and promotion; J. M. Spence, treasurer; and W. A. Greene, secretary. Urban Hipp has been elected assistant treasurer, and F. J. Merrill, assistant secretary.

A native of Illinois, Mr. Greene attended the University of Illinois where he first met the late Harry H. Barber. The two men met again some years later, when Mr. Greene became advertising manager of the Stephens-Adamson Mfg. Co. of Aurora, where H. H. Barber was a sales engineer. Together they visualized a market for standardized conveyors, and with this idea, started the Barber-Greene Co. in October 1916.

New Barber-Greene president, H. A. Barber, dates his association with the company to his grade school days, when he spent summer vacations working in the various shop departments. He attended the University of Illinois, and in 1933 started with the firm on a full-time basis. He has served as field-service engineer, design-development engineer, and chief engineer, and in 1937 was promoted to vice-president, where he devoted his time to general administration work in manufacturing and sales.

Barber-Greene's products which are manufactured in the United States, Canada and England, include belt conveying equipment, bulk material loaders and unloaders, ditch machines, and similar heavy equipment. The company is also the world's largest manufacturer of bituminous, or "black-top" paving machinery.

Plant Laboratory For The Little City

The little city's water and sewage plants can today assemble a laboratory as efficient and effective as any in the nation's largest, by the use of a planning folder distributed by METALAB EQUIPMENT CORP., 224 DUFFY AVE., HICKSVILLE, L. I., N. Y.

The new folder features a transparent plastic guide rule and template corresponding to the ¼-inch to 1-foot scale, with rectangular cutouts representing various base units. A compactly designed floor is illustrated, showing all types of bases that would lay out properly, and an explanatory chart states the types of units that are above and below the table tops.

The back page of the folder lists and illustrates service symbols and letters along with the company's recommendations of color schemes, floor coverings, and illumination. Special graph paper, ¼ inch to 1 foot, is inserted to help you use the "Plan-A-Lab" folder.

Metalab is also offering *Catalog SD-2*, a new brochure that facilitates the selection of the proper laboratory equipment and contains illustrations of convenient room layouts, equipment and accessories.

For your copies of the new "Plan-A-Lab" folder and *Catalog SD-2*, address the manufacturer directly, or you may use the Post Card on the colored page in this section. Circle No. 860.

New Name for L-M Fibre Pipe

Known as L-M Fibre Pipe for over 25 years, the bituminous fibre pipe made by the Line Material Co. has been redesignated L-M Perma-Line Pipe, according to W. M. Bloom, the firm's fibre products manager. The new name, he reports, was chosen because it indicates the permanency of the pipe, and registration of the Perma-Line trademark has been applied for by the company.

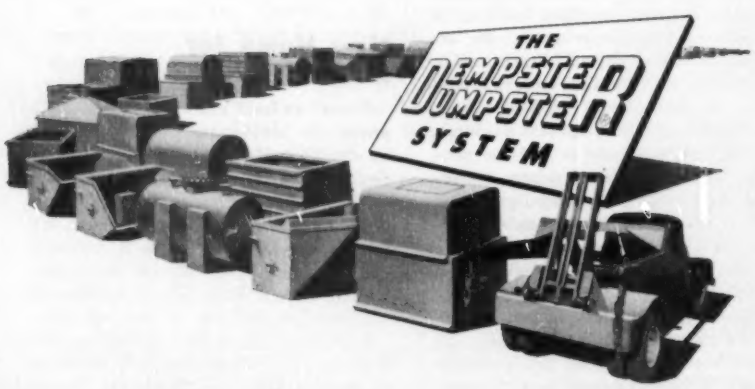
L-M Perma-Line Pipe and fittings are made in 2- to 8-inch sizes at L-M plants in Barton, Wis., and Sherman, Texas. Main offices of the Line Material Co. are located at Milwaukee, Wis.

Here's a One-Man Trash and Rubbish Collection System for your City

In the Dempster-Dumpster System of trash and rubbish collection only one man, the driver of the truck-mounted Dempster-Dumpster, is required for operation. The Dempster-Dumpster serves scores of detachable Dempster-Dumpster Containers located at such places as schools, hospitals, market and housing areas, hotels, grocery stores, department stores, restaurants, etc. Each container is loaded by the user. By prearranged schedule, the Dempster-Dumpster picks up, hauls to disposal area and empties each container—one after another. Entire operation is handled by hydraulic controls in truck cab, as shown above.

Container capacities range up to 4 times that of conventional dump truck bodies and each container built for trash and rubbish is completely closed—eliminating the health menace of disease carriers such as rats feeding on open and scattered refuse due to unsanitary and inadequate trash cans, barrels, crates, etc.

Without question, the Dempster-Dumpster System is the most sanitary and lowest cost method of bulk rubbish collection ever devised. Write to us for complete information. Manufactured exclusively by Dempster Brothers, Inc.



One Truck-Mounted Dempster-Dumpster Handles Scores of Containers . . . All Designs . . . All Sizes

DEMPSTER BROTHERS, 854 Dempster Bldg., Knoxville 17, Tennessee

A.W.W.A. Convention to See New Chlorinator

A new chlorinator will be introduced at the A.W.W.A. convention this month, by WALLACE & TIERNAN, NEWARK 1, N. J. Designated the A-701, it features such improvements as a dual orifice meter which automatically, or by the flip of a switch, permits feed ranges up to 100 to 1.

With a maximum capacity of 1,000 pounds per 24 hours, the A-701 offers a linear scale reading of the chlorine flow rate, and is equipped with automatic electric, hydraulic, air or vacuum control. Where possible, parts have been constructed of corrosion-resistant materials, with a heavy fiberglas pedestal, and a newly designed glass-enclosed visible-vacuum and water-diaphragm principle of feed control.

The new chlorinator is further described in literature from Wallace & Tiernan. Write the company directly, or you may use the Post Card that is located on the colored page in this section. Circle No. 867.

Better Swimming Pools Feature Diatomite Filters

Cities planning the construction of new swimming pools, or the improvement of existing pools would do well to follow the lead of the Beverly Hilton Hotel in Beverly Hills, Calif. A 50- by 50-foot swimming pool to be built at the new $14,000,000 hotel will feature a diatomite filtration plant, consisting of one battery of two model DF88 diatomite filters. The units have a neophrene rubber lining and standard septum elements, and the plant operates at 450 gallons per minute.

Made by The General Filter Co., the diatomite filters consist of a closed tank with cylindrical elements having very small surface openings. The pressure of water through these elements is used to hold a thin, tight coating of diatomaceous material against the element, and water passing through this diatomite mass has to travel through extremely small porous spaces. This gives a fine filtering action, and provides effluent water of high clarity and low turbidity.

For detailed information on GFC diatomite filters, address THE GENERAL FILTER CO., AMES, IOWA, or you may use the Post Card on the colored page in this section. Circle No. 835.

The
FORD
Yokebox
A Better Meter Setting for Shallow Services
A simple, compact meter housing, complete with service valve, for warm climate installations. The modern and better way to install water meters. Gives better protection, keeps meter cleaner. An investment in easier meter reading, longer meter life and greater revenue.
Write for information on the Yokebox.
1. Small lid, clean meter, speeds meter reading.
2. Easy to handle, quickly installed as a unit.
3. Meter changes quick and easy, without cumbersome tools.
4. Service valve easily operated and well protected.
FORD
FOR BETTER WATER SERVICES
THE FORD METER BOX COMPANY, INC. Wabash, Indiana

CALMET

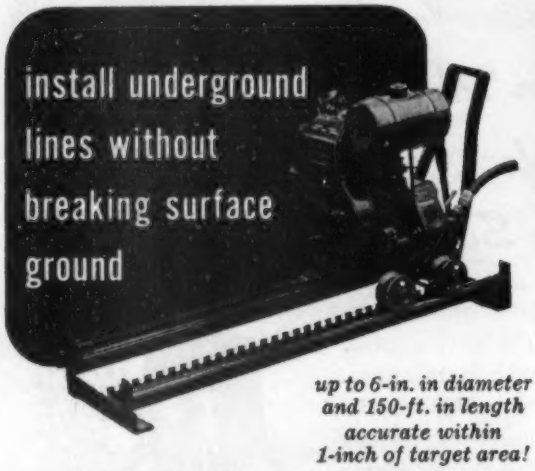
"THE METER YOU CAN COUNT ON"

Manufactured to meet ALL A. W. W. A. Specifications...

(Yours too!)

Manufactured by
Well Machinery & Supply Co., Inc.
Fort Worth, Texas

Make the CALMET Booth No. 57 your headquarters at the Seattle Convention, May 23 to 28.



up to 6-in. in diameter and 150-ft. in length accurate within 1-inch of target area!

FOR WATER, GAS, SEWER, TELEPHONE, TRAFFIC SIGNAL AND MANY OTHER TYPES OF LINES!

Bore a 6-inch hole at 1½ f.p.m....with automatic warning of underground hazards. The EARTHWORM bores 1000 feet of underground line per gallon of gasoline. Use pipe or conduit as drill stem sections and leave as permanent installations. Save pavement and labor...save thousands of dollars per year...with the proved-in-the-field advantages of EARTHWORM!

IMMEDIATE DELIVERY! SEND FOR DETAILS!

LUBE-JACK CO.

P.O. BOX 1100
Santa Monica, California

Nite-Bright

HIGHWAY SIGNS

"BRIGHT BY DAY — BRILLIANT BY NIGHT"

FOR THE BEST IN TRAFFIC SIGNS (heavy type)
ALUMINUM SIGNS REFLECTORIZED WITH SCOTCHLITE • EMBOSSED STEEL BAKED ENAMEL SIGNS
CHANNEL IRON SIGN POSTS IN STOCK
TRAFFIC CONES—IMMEDIATE SHIPMENT

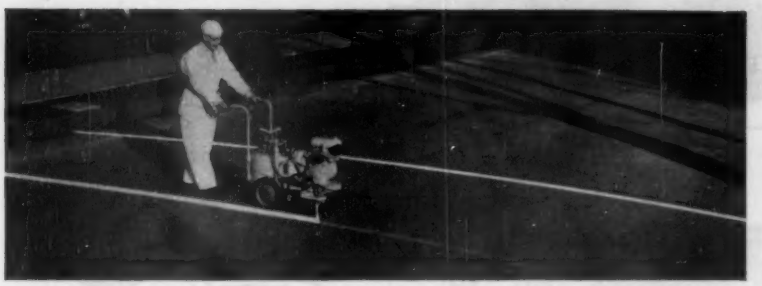
See Our Listing in the 1954 Edition of The Municipal Index

Write Us for Complete Information

NITE-BRIGHT SIGN COMPANY
140 JAMES STREET, BRIDGEPORT 4, CONN.

Purchasing News

Marks Traffic Lines Quickly



Reflecto-Liner Jr. has no difficulty painting straight, clearly visible traffic lines.

A new, small size striping machine, the Reflecto-Liner Jr., has been added to this company's line of traffic marking equipment. It is a low-cost, easy-to-operate unit, adept at marking parking lots, crosswalks, and center lanes, and is equipped with a high-capacity spray gun.

The Reflecto-Liner Jr. quickly applies reflective materials, premixed compounds, or plain traffic paints. It is valuable as a portable source of air, handling all municipal plant maintenance requirements such as sign, guard rail and curb painting.

A high air gun ratio, 2:1, is featured in the new striping machine, along with a reserve air capacity of 50%. The unit is adaptable for handguns and dispensers, and incorporates a wide-mouth paint tank and standard thread and fitting for easier maintenance.

WALD INDUSTRIES, INC., HUNTINGDON, PA., will send complete information. Write directly, or use the Post Card in this section. Circle No. 861.

FOR QUICKER, SURER LOCATIONS EVERYTIME

THE *New* AQUA VALVE BOX LOCATOR

New engineering design, perfected after two years of research and now built into the AQUA at no additional cost to you MEANS ABSOLUTE MINIMUM OF NEEDLE-SPINNING ACTION!

YOUR NAME IN GOLD FREE!
It's Magic! The new Aqua Extra Conductor development . . . an exclusive in the location instrument field!

$29.50 F. O. B. CINCINNATI

SEND NO MONEY! Try AQUA for 15 days — you be the judge.

". . . greatly improved . . . no needle nervousness . . . pinpoint accuracy. The new Aqua has our unqualified approval!"
W. F. Becker, Chief Inspector
The Ohio Fuel Gas Co. Columbus, Ohio

Literature on request — address Dept. AC

AQUA SURVEY & INSTRUMENT CO.
2518 LESLIE AVE. . CINCINNATI 12, OHIO

Exclusive! "GLIDER"

BURKE PLAYGROUND EQUIPMENT

Complete line of playground, home, playschool play devices.

BURKE EXCLUSIVES
★ HOBBY-HORSE
★ GLIDER
★ CLIMB-A-ROUND

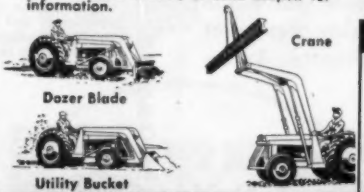
Write for special literature catalog, price list, booklet "Planning Your Playground" or specifications.

THE J. E. BURKE PLAYGROUND EQUIPMENT CO.
Factories at
FOND DU LAC, WISCONSIN
BOX 986, NEW BRUNSWICK, N. J.

The Unconditionally Guaranteed Davis Hydraulic Loader

HAS THIS HANDY CONCRETE BUSTER ATTACHMENT

Here's an attachment to the Davis Loader that handles toughest jobs in real man-saving time. This, plus other year-around attachments, and such exclusive features as 12-minute attachment, box-frame construction, oil filter, adjustable arms that keep bucket in correct position to ground, plus many others, make it your best loader buy. See your dealer, or send coupon for information.



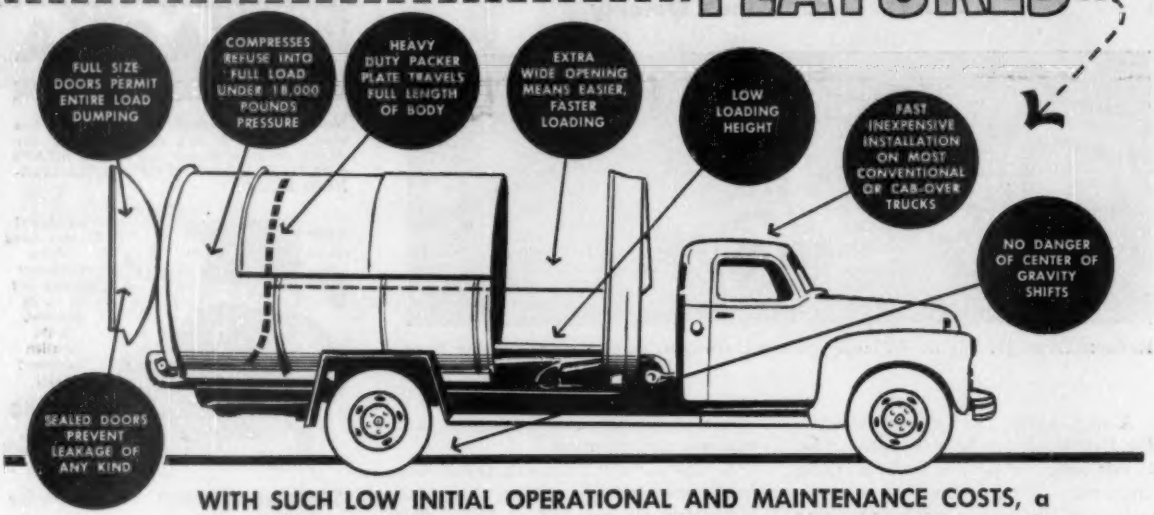
Send this Coupon for Complete Information

Dept. A
Send me literature on the Davis Loader_____, and Concrete Buster Attachment_____ to fit a _____model tractor.

Name_____
Address_____
City_____State_____

MID-WESTERN INDUSTRIES, INC. 1009 S. WEST ST., WICHITA, KAN.

No Other Refuse Collection Unit Combines All These FEATURES

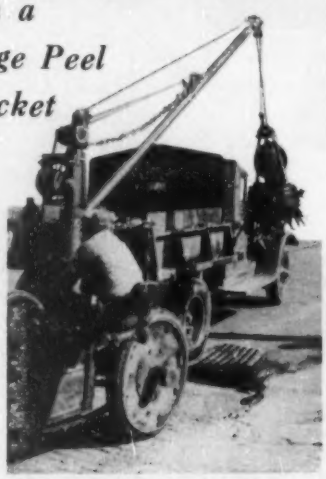

FULL SIZE DOORS PERMIT ENTIRE LOAD DUMPING
COMPRESSES REFUSE INTO FULL LOAD UNDER 18,000 POUNDS PRESSURE
HEAVY DUTY PACKER PLATE TRAVELS FULL LENGTH OF BODY
EXTRA WIDE OPENING MEANS EASIER, FASTER LOADING
LOW LOADING HEIGHT
FAST INEXPENSIVE INSTALLATION ON MOST CONVENTIONAL OR CAB-OVER TRUCKS
NO DANGER OF CENTER OF GRAVITY SHIFTS
SEALED DOORS PREVENT LEAKAGE OF ANY KIND

WITH SUCH LOW INITIAL OPERATIONAL AND MAINTENANCE COSTS, a Pak-Mor Refuse collection unit on your streets means a progressive municipality. Your city will save man hours and dollars. More than 400 cities in 38 states and 8 foreign countries are now Pak-Mor users. Write for free literature and name of your nearest dealer.

PAK-MOR MANUFACTURING CO.

P.O. BOX 8147
SAN ANTONIO, TEXAS

Nothing in a catch basin is safe *from a Hayward Orange Peel Catch Basin Bucket*



Nothing is in a catch basin after the specially designed Hayward Bucket has cleaned it.

The Hayward Orange Peel Catch Basin Bucket was designed specifically to solve the problem of cleaning sewer catch basins that beset nearly every city and town in the country. Write for Bulletin 805.

THE HAYWARD COMPANY

50 Church Street New York 7, N. Y.

UNITED

UNANIMOUS CHOICE

Of Municipalities
For Every Sanitary Need

UNITED

WASTE RECEPTACLES

By overwhelming choice, UNITED gets the vote of forward-looking communities because of:

long range economy • sturdy construction • durable performance

ROUND TOP RECEPTACLES

Wherever modern decor demands a functional and attractive receptacle the new Round Top is TOPS.

SWING TOP RECEPTACLES

For thoroughfares, public buildings, parks, schools—wherever sturdy, safe, dependable efficiency is essential.

SANITARY NAPKIN DISPOSAL RECEPTACLES

Eliminate clogged drains. Foot pedal operated. Galvanized steel inner container is easily removed for emptying. Practically air-tight when closed.

Write for Catalog

UNITED METAL BOX CO. INC.

BROOKLYN 15, N. Y.
UNITED West Coast Distributor: SHORELINE METALS UNITED

Purchasing

A Warm Climate Meter Setting

The Yokebox, a new cast-iron meter housing for shallow or warm climate settings consists of a bottom pan with fittings, a slightly tapered oval-shaped cylindrical housing, and a lid, and will fit ⅝-inch or ⅝- x ¾-inch water meters. It protects the meter from mechanical damage from above and from mud below, so that the meter remains clean longer, is easier to read, and less costly to maintain.

The pan of the Yokebox is set about a foot below the surface and is surmounted by the sidewall housing that forms a connection with the rim of the pan, and supports an oval-shaped cover across the top. Drainage is facilitated by holes in the bottom of the pan.

The meter is lowered into position between end fittings which are permanently aligned to take or release the meter with minimum effort. When the meter is placed, it is set by means of a small hand wheel that forces the meter connections outward into the Yokebox fittings.

Water meter is fully protected by the new Ford Yokebox housing.

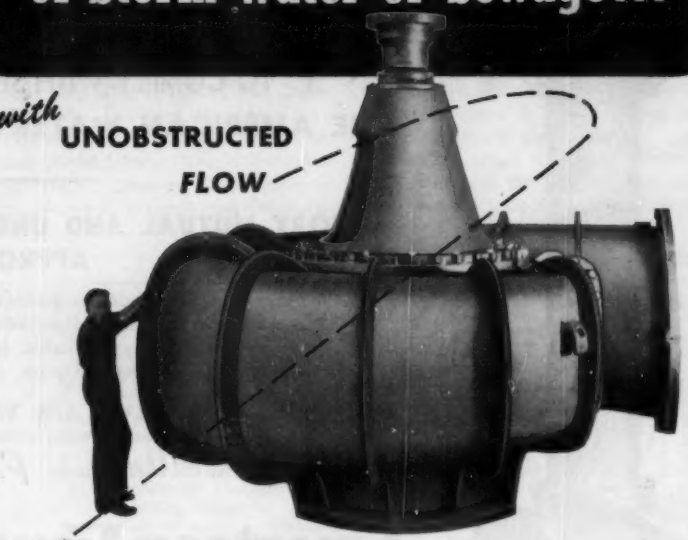
The service valve sets at an angle so that it may be turned easily with a key which is located on a handle that extends through the top of the housing, expediting servicing and meter readings. The lid of the Yokebox is available with or without a lock, and is flat across the top for flush-with-surface installation.

Housed in the new Yokebox, the meter is easily removed or replaced without disturbing the service line. This type housing can best be used in warm climates or in summer resort areas where service lines are drained during cold weather.

FORD METER BOX CO., WABASH, IND., will furnish complete information on the new cast-iron housing. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 864.

To handle LARGE Capacities of Storm Water or Sewage...

with **UNOBSTRUCTED FLOW**



—SPECIFY *Morris*

MIXED FLOW PUMPS

The most practical type of pump in the larger sizes, for abrasion resistance and ability to handle large stringy solids without clogging.

In the Morris Mixed Flow sewage pump there are no guide vanes in the suction, nor stationary diffusion vanes on the upstream side of the impeller, to catch longer fibrous material. Enclosed impellers which are most generally used are better able to withstand the abrasive action of grit and dirt. No internal bearings in contact with the sewage. Initial capacity and efficiency are maintained over longer period of time.

No other pump is so successful in maintaining freedom from clogging where large capacities and high speeds are required. In both vertical type (illustrated) and horizontal type, Morris Mixed Flow pumps have capacities ranging up to 150,000 G.P.M. In city after city, engineers prefer Morris pumps for efficiency, dependability, long life and economy. Every unit is backed by 84 years' experience in hydraulic engineering.

Write for your free copy of bulletin 178, describing Morris Mixed Flow Pumps.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Branch Offices in Principal Cities

MORRIS *Centrifugal Pumps*

"AMERICAN" FIRE HYDRANTS

MANUFACTURED IN ST. LOUIS
TO COMPLY WITH SPECIFICATIONS OF
THE AMERICAN WATERWORKS ASSOCIATION

FACTORY MUTUAL AND UNDERWRITERS LABORATORIES APPROVED

All "American" fire hydrants manufactured in three standpipe styles: "One-piece", "Two-piece" and "Swivel-head." With outlets suitable for job as specified. Available in following inlets: bell, flange, mechanical joint, for transite pipe, iron pipe, with lugs for strapping.

VALVES AND VALVE BOXES

Serving the Waterworks Profession Over 60 Years

American Foundry & Mfg. Co.
St. Louis, Mo.

1015 Hebert St. Write for Descriptive Literature CE 1-6114

15th of a series

COLUMBUS, OHIO VOTERS LIKE THEIR AUTOMATIC VOTING MACHINES

"In their first stern local test the machines performed in a most commendable fashion, giving complete results less than four hours after the official closing time of the polls.

"When all factors are considered this was an amazing performance. . . . No comparison between the machines and pencil and paper method of balloting and tabulating."

—Editorial comment Ohio State Journal 5-10-52.

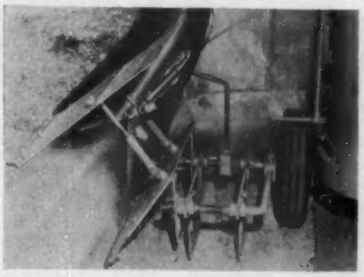
COLUMBUS, OHIO USED 125 AUTOMATIC VOTING MACHINES AT THE ABOVE MENTIONED PRIMARY ELECTION, MAY 6, 1952

AUTOMATIC VOTING MACHINE CORP.
JAMESTOWN, NEW YORK

Curb Painting

Paint any curb in your community quickly and economically with this practical, time-saving curb-painting attachment, developed recently for use with all Universal line markers.

Adjustable to all curb heights and widths, this new attachment may be



New curb-painting attachment is easily adjusted to all curb heights and widths.

operated at walking speeds. Shields are provided to protect the surface of street and parkway lawns from paint spray, and the regular spray gun and other Universal line-marker controls are utilized.

This handy curb-painting device is made by the UNIVERSAL MFG. AND SALES CO., 5211 PACIFIC BLVD., HUNTINGTON PARK, CALIF. For full information, write the company directly, or you may use the Post Card, located for your convenience on the colored page in this section. Circle No. 843.

Dresser Industries to Expand in Tulsa, Okla.

Purchase of some 15 acres located at the northwest corner of Sheridan Road and 15th Street, in the New Sheridan Industrial District of Tulsa, Okla., clears the way for further expansion by the company, and begins a long-range program involving an ultimate capital expenditure exceeding one million dollars, reports J. B. O'Connor, executive vice-president of Dresser Industries, Inc.

An immediate program, according to the company, calls for the construction of a modern brick office building and a warehouse building fronting on Sheridan Road, Tulsa, for Clark Bros., of Olean, N. Y., one of the largest Dresser operating companies, and leading manufacturers of electric, steam and gas engine-driven compressors. Clark Bros. will move from its present Tulsa location into these new quarters early this summer.

In the near future, certain Dresser subsidiaries may be relocated at the new Tulsa site, among them Pacific Pumps, Inc., Huntington Park, Calif.

Other Dresser firms are Bovaird & Seyfang Mfg. Co., Bradford, Pa.; Dresser Mfg. Div., Bradford, Pa.; Ideco Div., Columbus, Ohio; Dallas and Beaumont, Texas; Kobe, Inc. Div., Huntington Park, Calif.; Magnet Cove Barium Corp., Houston, Texas; Roots-Connersville Blower Div., Connersville, Ind.; Security Engineering Div., Whittier, Calif., and Dallas, Texas; and Stacey Brothers Div., Cincinnati, Ohio.

Dresser also reports long-range plans for the eventual location of manufacturing facilities on the Tulsa site, which may eventually occupy a total area of several hundred thousand square feet. Main offices of the company will remain in the Atlantic Bldg., Dallas, Texas.

How Bennett Bilt WASTE RECEPTACLES reduce Fire Hazards!

Fire hazards are reduced by conveniently placing Bennett Bilt, self-closing, Waste Receptacles to receive waste paper and other trash. These enclosed Bennett Receptacles snuff out fires. Matches, cigarettes and other inflammable material thrown into open containers can start serious fires. That's why so many municipalities standardize on Bennett Receptacles . . . make cleanliness automatic, too.

Only BENNETT WASTE RECEPTACLES HAVE ALL THESE FEATURES

- Non-rusting stainless steel feet eliminate rusting and rust marks
- Made of extra heavy corrosion resistant steel
- All welded construction... reinforced corners
- Smooth exterior surface... nothing to catch and tear clothes
- Self-closing mechanism assures closed doors when not in use
- Round corners for structural strength and pleasing appearance
- Baked enamel finish... green, gray or white

These are a few of the many features that make Bennett Bilt Waste Receptacles a natural "buy". Quality and every consideration for hard usage are self-evident both inside and outside of these receptacles.

Fill in and Mail Coupon Today

THE BENNETT MANUFACTURING CO., ALDEN, N. Y., DEPT. AC-5-54

Kindly send to my personal attention a FREE copy of the fully illustrated Bennett Bilt Waste Receptacle Catalog.

Name _____

Organization _____

Street _____

City _____ State _____

When you need... VERSATILE ...RELIABLE ...Low Cost Boat Power

EVINRUDE
OUTBOARD MOTORS

Special barge for removal of floating islands from water supply, Charleston, S. C. Propelled by 25 H.P. Evinrude.

LOOK SHARP at the savings when you power *any* type of boat with an Evinrude instead of an inboard engine. *Low initial cost* . . . and that cost is *all!* No expensive installation work—no accessories—no "extras"—all of which can easily total more than the original engine cost.

More important, look at the *advantages.* Complete portability. Motors can instantly be transferred from boat to boat. No sacrifice of hull space. Utmost simplicity of operation and servicing. Safe and efficient running in shoalest waters. Complete maneuverability with gearshift which provides Neutral, Forward, Reverse.

Wherever power requirements are under 30 H.P., Evinrudes are the logical choice. For literature describing the complete Evinrude line, write EVINRUDE MOTORS, Dept. C, 4427 N. 27th St., Milwaukee 16, Wis.

In Canada: Manufactured by Evinrude Motors, Peterborough, Ontario.

26-ft. waterfront work boat employed in ferrying and general utility service. Carrying capacity up to 8 tons. Speed, to 15 m.p.h. with 25 H.P. Evinrude, depending on load. An exceptionally capable and useful craft.

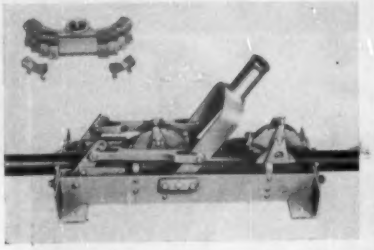
Dusk and Dawn Turn Street Lights On and Off

A new photoelectric light switch is offered for turning street lights on at the approach of darkness, and turning them off at dawn. To prevent lightning and headlight beams from actuating the switch, there is a 2-minute time delay between exposure to sufficient light to operate the switch and its action in turning off the street lamps.

A translucent case makes the switch sensitive to light from all directions. The unit is only 4 inches in diameter, 5 inches high, and weighs 1½ pounds. It plugs into a receptacle on the luminaire or elsewhere in the circuit.

For ful information on the Lumatrol Photoelectric Light Switch, write MICRO BALANCING, INC., GARDEN CITY PARK, N. Y., or use the Post Card on the colored page in this section. Circle No. 849.

Pipe Burrowing Made Easier



The Trojan model B pipe puller and pusher for installing or renewing pipe under pavement without breaking the surface, has been equipped with a new, longer-wearing gripping dog, according to the TROJAN MFG. CO., 1113 RACE DR., TROY, OHIO. Individual carbonized steel inserts, interchangeable with one another, are used for each step of the dog. Thus, as each insert wears, it is replaced by an inexpensive unit, saving the cost of buying a complete new dog.

The model B itself, will push or pull pipe up to 2 inches in diameter without additional dogs, clamps, or wedges. It requires only a 5½-foot trench, has three pushing speeds for different types of soil, and can be reversed in about 30 seconds by turning the dogs over in the opposite direction.

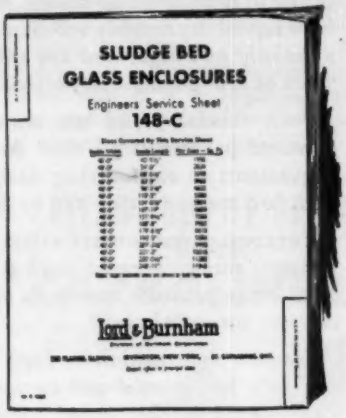
Complete information on the 140-pound model B pipe puller and pusher and the new gripping dog, is available from the Trojan Mfg. Co. Write directly, or take advantage of the Post Card on the colored page in this section. Circle No. 819.

GLASS COVERS for SEWAGE TREATMENT PLANTS

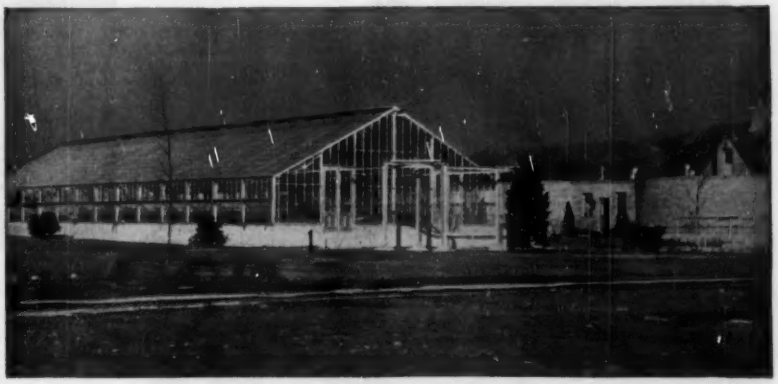
Sludge beds, sprinkling filters, tanks or wherever a glass cover is needed.

Send for These Valuable Engineers Service Sheets

Set of six Engineers Service Sheets furnished on request. Contain details, specifications and recommendations to suit individual job requirements.

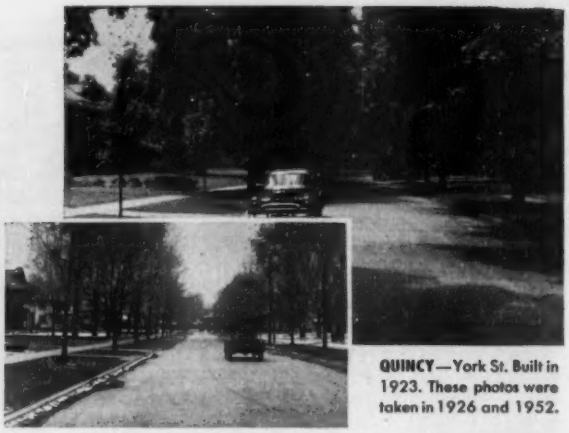


Lord & Burnham
DIVISION OF BURNHAM CORPORATION
IRVINGTON, N. Y. DES PLAINES, ILL.



Typical Sludge Bed Glass Cover

URBANA—Broadway St. Built in 1920. Photos taken in 1921 and 1952.



QUINCY—York St. Built in 1923. These photos were taken in 1926 and 1952.

Here today—*and still here tomorrow* that's the story of Illinois' CONCRETE streets

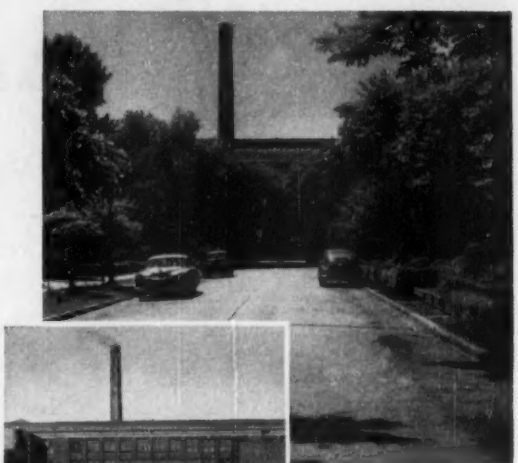
Motorists, taxpayers and city officials in Illinois can be proud of their concrete streets. Many of these pavements have served dependably and economically for a quarter of a century or longer and are still good for many more years of ***low-annual-cost*** service.

Such durability and ***low annual cost*** are typical of concrete pavements all over America. Now, with improvements in engineering design, materials and construction methods, they can be built even better.

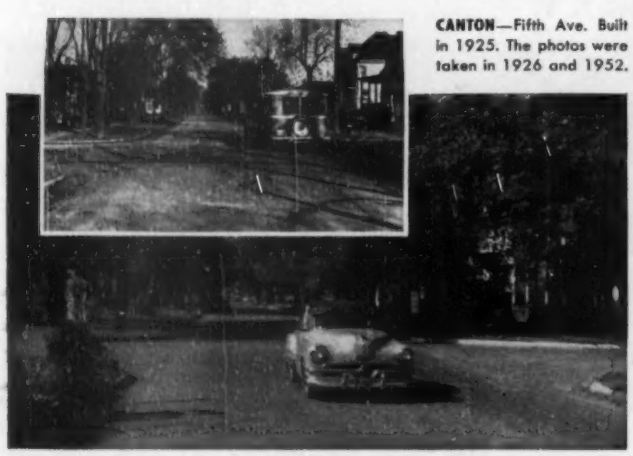
Concrete pavements are safest too. Their gritty, skid-resistant surface permits *quick* stops—wet or dry. Their light color provides maximum visibility at night. *If you can't see you can't be safe!*

For more information on designing and building durable, safe, ***low-annual-cost*** concrete pavement write for free literature. Distributed only in U.S. and Canada.

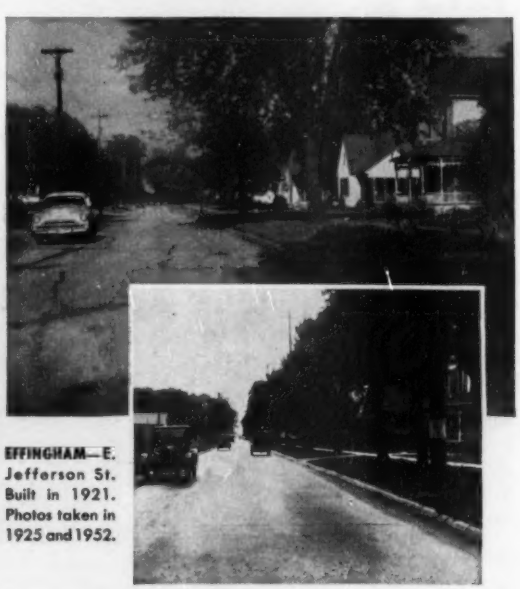
PORTLAND CEMENT ASSOCIATION
Dept. 5-4, 33 West Grand Avenue, Chicago 10, Illinois
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work



CHICAGO—Windsor Ave. in the 3700 block north. Built in 1925. These photos were taken in 1925 and in 1952.



CANTON—Fifth Ave. Built in 1925. The photos were taken in 1926 and 1952.



EFFINGHAM—E. Jefferson St. Built in 1921. Photos taken in 1925 and 1952.

"Lifetime" Plastic Traffic Sign Needs No Upkeep

Sy-Loy, a remarkable new plastic traffic sign reported to "last for a lifetime" without maintenance or repainting, is jointly introduced by The General Tire and Rubber Co., and Municipal Street Sign Co., Inc. The new sign won't break or rust, and is available plain or reflectorized with background colors permanently molded into the plastic.

Reinforced with tough fiberglas, fused under heat and pressure with weather- and age-resistant polyester resins and pigments, the lightweight Sy-Loy traffic sign is flexible, and always returns to its original shape. It is made in all sizes with standard legends. A new 24- by 24-inch or 30- by 30-inch white on red plastic STOP sign is also offered, and is fully reflectorized for 24-hour visibility.

For the new, illustrated Sy-Loy brochure, which discusses these attractive, long-wearing traffic signs, and includes technical specifications and a complete price list, address MUNICIPAL STREET SIGN CO., INC., 777-9 MEEKER AVE., BROOKLYN 22, N. Y., or you may use the Post Card on the colored page in this section. Circle No. 825.

TAX EQUALIZATION APPRAISALS

THE J. M. CLEMINSHAW CO.

Appraisers

Nationally Recognized for
Municipal and County Revaluation
Since 1923

An Authoritative Professional Service
Universally Accepted by Assessing Officers
and the Taxpaying Public

Write for Brochure and Client List

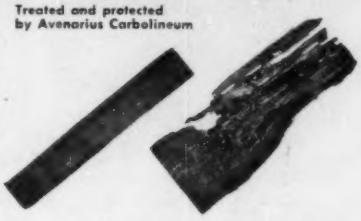
Main Office:
1132 Union Commerce Bldg.
Cleveland 14, Ohio

District Offices:

Hohokus, N. J.	50 Edgewood Dr.	Tel. Ridgewood 6-4883
Plainville, Conn.	11 Williams St.	Sherwood 7-0676
High Point, N. C.	100 So. Main St.,	Tel. 8957
Des Moines, Iowa	Savings & Loan Bldg.	Tel. 3-5154
Milwaukee, Wisc.	2014 Sunset Court	Tel. Spring 4-8934

EXTEND THE LIFE OF WOOD with CARBOLINEUM

Treated and protected by Avenarius Carbolineum



Not treated and almost completely destroyed within a short time.

Stop decay; stop termites. AVENARIUS CARBOLINEUM treated wood lasts 2 to 10 times longer than untreated wood.

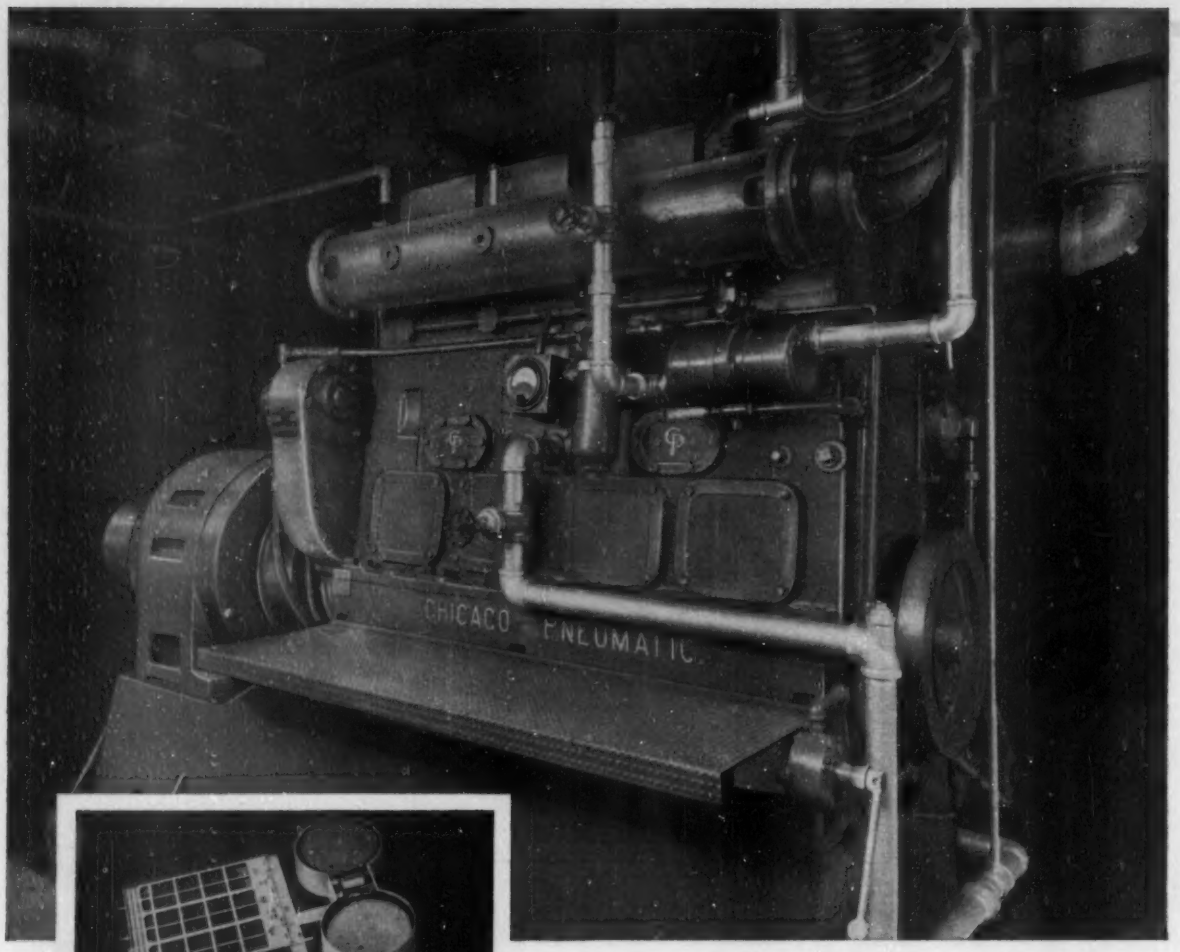
Use on new construction; repairs or structures already in use. Apply at job site — brush, spray or quick dip — no skilled labor required.

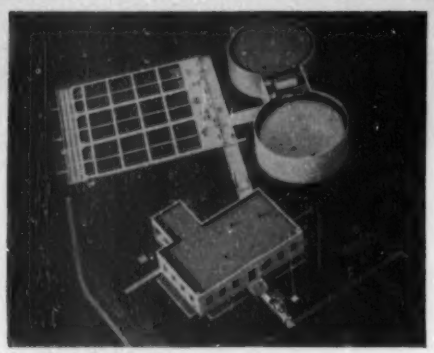
Over 4 times richer than creosote in wood-preserving oils. Used by leading industries since 1876.

Write for booklet and prices.

AVENARIUS CARBOLINEUM

CARBOLINEUM WOOD PRESERVING CO.
528 W. HIGHLAND BLVD. • MILWAUKEE 3, WIS.





Stratford, Connecticut
Sewage Treatment Plant
Designed by:
Bowe, Albertson & Associates, Engineers

a CP DUAL-FUEL does a dual job at Stratford

A CP Slow Speed Dual-Fuel Engine not only furnishes continuous power for the motors at Stratford's new Sewage Treatment Plant, but as a standby unit it is on duty 24 hours a day — ready to operate pumps to lift treated and raw sewage above flood tide level and to prevent street flooding in the event of a powerline failure.

Running on gas generated from waste sludge, the CP Slow Speed Dual-Fuel Engine affords real operating economy. CP Diesel, Dual-Fuel or Gas Engine Units are available in sizes delivering from 120 HP to 1750 HP and in normally aspirated or supercharged models. For information, write *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Revised Water-Works Handbook

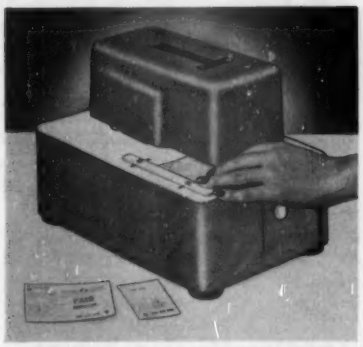
Every municipal water department should benefit from reading this revised 12th edition water-works handbook, available without cost from the Rockwell Mfg. Co.

The new, pocket-size edition includes 28 added pages of water-meter change-gear charts, cutaway drawings of eight principal types of meters, and such general information as standard specifications for cast iron and standard wrought iron pipe, a table of equation of pipes, water-meter testing hints and tables, and instructions for reading water meters. In addition, there are water-use rate tables, flow charts, hose and fire stream data, maps, and blank memo pages.

All charts and tables contained in the handbook have been brought up to date, and a wealth of basic information has been added, including the properties of water, weights and measures, and conversion tables.

For your copy of the revised handbook, address the Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa., or you may use the Post Card on the colored page in this section. Circle No. 821.

Fast-Acting Machine Receipts All City Bills



Model 200 combines simple, one-handed operation with greater efficiency.

Municipalities are offered the model 200, a new, portable, electric stamping receiptor that will receipt water and other bills quickly and accurately. It stamps the bill "PAID," with the teller's identification number and the date; severs the bill, and automatically drops the accounting stub into a locked compartment. This locked compartment makes it practically impossible to lose or misplace the receiving teller's record of payment.

Using the model 200, the operator stamps the bill without cutting or notching holes in the paper, thereby avoiding alterations that would cause misorting or jam any electronic sorting or tabulating machine. A continuous ribbon eliminates changing spools and dispenses with the need for inking pads. A standard hand changing ratchet-type date mechanism permits a quick, clean change of dates. There is no loose type to set because all printing is done with engraved plates.

The new receiptor measures 12 x 8 inches, and weighs only 16 pounds. It is made by The American Perforator Co., 625 W. Jackson Blvd., Chicago 6, Ill. For additional data, write the company directly, or you may use the Post Card on the colored page in this section. Circle No. 859.

KOHLER ENGINES

4-CYCLE
AIR-COOLED

K90 3.6 H.P.
K160 6.6 H.P.
K330 12.0 H.P.
K660 26.8 H.P.

Kohler Engines are engineered and manufactured to the high standards which have made the Kohler mark known for quality the world over.

Power for garden tractors, pumps, sprayers, snow removal equipment, grain elevators, hoists, portable saws, concrete mixers, compressors, industrial lift trucks.

Write for information

Kohler Co., Kohler, Wisconsin
Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

The Handiest "Tool" Your City Can Own!

Why tie up your budget dollars in expensive one-purpose rigs when a mobile, all-purpose Bantam can handle hundreds of digging and lifting jobs at no added expense?

Bantam quickly converts with 9 fast-change front end attachments to trenching, dragline, clamshell, shovel, magnet, pile driver or concrete bucket operations.

Bantams are low-cost . . . work fast . . . move from 1 location to another to handle big jobs in a hurry. A Bantam enables you to handle your own street repairs . . . make sanitary and storm sewer installations . . . handle spot repairs on existing lines.

Crawler or truck-mounted, there's a Bantam mounting to fit your job needs. Find out more about the low cost -- low maintenance Bantam. Write for complete specifications, information and prices. Arrange for a free demonstration on your job. Write today!

MORE JOBS BANTAMS CAN HANDLE!

- Street & alley repairs
- Building highway approaches
- Sanitary landfill projects
- Spot repairs on sewers & mains
- Materials handling in yards
- Building and maintenance of water purification systems
- Building sewer beds
- Airport runway and drainage projects
- Hangar construction
- Earth moving—park & golf course projects
- Bridge maintenance building and repair

T-35 Bantam on All-New Crane Carrier Lifts 12,000 Lbs.

Bantam mounts on Crane Carriers, Re-manufactured trucks or your own trucks of suitable size. Also available on tracks - Crawler Bantam features 2-speed independent travel, has 16", 24" or 32" pads to go anywhere in any ground condition.

C-35 Bantam Crawler 3/8 Cu. Yd.

SB-AC-2

WORLD'S LARGEST PRODUCER OF TRUCK-CRANES AND EXCAVATORS

SCHIELD Bantam®

COMPANY • 234 PARK ST., WAVERLY, IOWA, U.S.A.

Purchasing

New Rotary Mower for Parks and Airports

A new rotary cutter that will do a wide variety of cutting jobs and is especially useful around airports, in parks, and on public lawns, has been added to the Dearborn equipment line, reports O. L. Wigton, general sales manager of the TRACTOR AND IMPLEMENT DIV., FORD MOTOR CO., BIRMINGHAM, MICH. The 5-foot rotary-blade mower is designed to shred as well as cut weeds and brush, and will do the job faster and at less cost than previous models.

An interesting feature of the Dearborn rotary cutter is the removable deflector shield, mounted under the blade hood, which facilitates the even distribution of cut material. By removing this deflector, the material can be windrowed behind the machine. The cutter is lifted and lowered by Ford tractor hydraulic control.

Weighing some 653 pounds, the sturdy mower has full-length runners on the

Use the new rotary mower to cut brush, small trees and heavy weed growth.

lower edge of the hood to prevent the blades from gouging the soil. A gauge wheel, with puncture-proof tire, provides a positive cutting-height range from 2- to 10 inches.

For complete data on this newest addition to the Dearborn line, address the company directly, or you may use the Post Card on the colored page in this section. Circle No. 837.

Locates Missing Valves

Improved to reduce needle swing to a minimum, the Aqua valve box locator will find those missing valves and valve boxes quickly and accurately, reports THE AQUA SURVEY AND INSTRUMENT CO., 2518 LESLIE AVE., CINCINNATI 12, OHIO.

The company, working in cooperation with faculty members of the University of Cincinnati's Engineering College, recently perfected a copper-shielding type of inner construction which

semi-encloses the needle swing area of the instrument. This construction sets up a series of magnetic fields which act as "brakes" on the swing of the

Improved Aqua valve box locator features a minimum of needle swing.

needle, eliminating "needle nervousness."

The new instrument, after extensive field tests, is reported completely accurate in every type of soil and under all weather conditions.

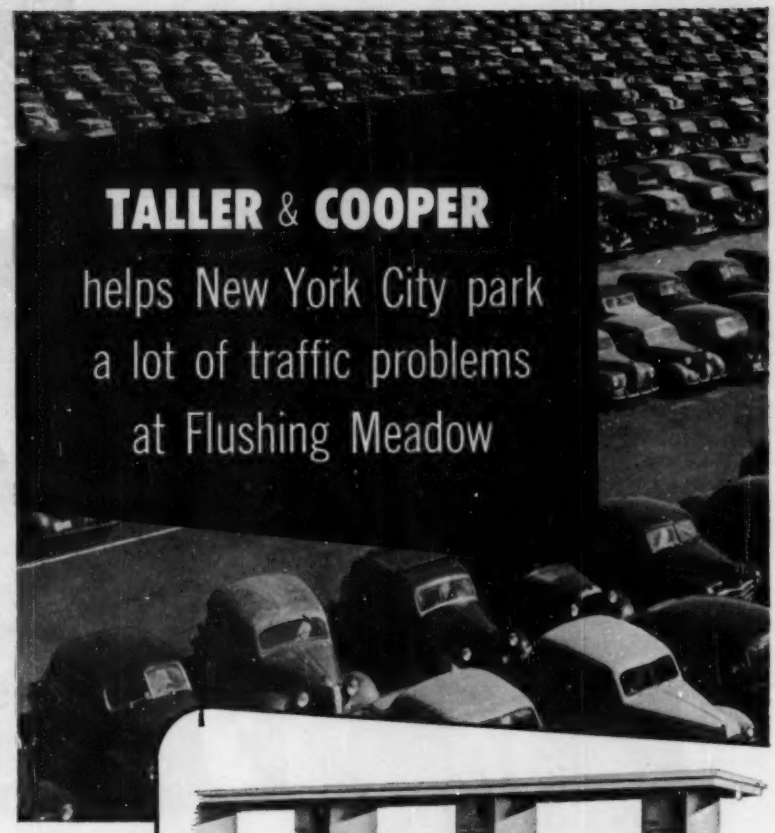
For further details, write the company directly, or take advantage of the Post Card on the colored page in this section. Circle No. 858.

New, Low-Cost Chain Saw

"Jet-fed" carburetion, says the Lombard Governor Corp., permits the new model 3½D gasoline-powered chain saw to run full power, cutting at all angles. The direct carburetor connection to the crankcase speeds starting, and insures efficient operation in the coldest weather. There are no tube or pipe connections to dissipate energy.

The chain and guide bar of the new model 3½D are protected from wear by an automatic oiler and shut-off, providing constant oil lubrication while the saw is in operation. Other interesting features of the unit include its rust-resistant chrome plating, better balance, an automatic clutch and rewind starter, positive chain tensioning control, high voltage, and dependable magneto ignition. In addition, there is a precision splined sprocket, double bumper spike, and a "cover all" air filter case.

Full data on the new, low-cost chain saw are available from the Lombard Governor Corp., Ashland, Mass. Write directly, or you may use the Post Card in this section. Circle No. 851.



The vast Flushing Meadow Parking Lot in Queens, New York, gets efficient, safe toll collection with Taller & Cooper Prefabricated Booths.

Taller & Cooper prefabricated booths are playing an increasingly important role in America's plans to relieve her growing parking problems. At Flushing Meadow, and many other parking areas, throughout the country, Taller & Cooper self-contained booths are being used to assure the greatest collection speed and revenue protection.

The all steel construction of Taller & Cooper booths offers years of maintenance free operation, provides safe, comfortable working conditions. Prefabricated in the factory, they can be erected on your site in a matter of hours.

If you are planning a parking area, plant entrance, park, or any facility requiring a guard or collector . . . let TALLER & COOPER help you achieve the finest in efficient & economical prefabricated booths.

WRITE TODAY for design and construction details.

TOLL BOOTHS
•
TOLL COLLECTION SYSTEMS

TALLER & COOPER, INC.

ENGINEERS • MANUFACTURERS

72 Washington Street • Brooklyn 1, N. Y.

TALLER & COOPER TOLL COLLECTION EQUIPMENT IS USED ON EVERY MAJOR TOLL FACILITY IN THE U. S.

Stop! Look! See!
Amazing
"Dacron" and wool blends
For
Uniforms
These new American Woolen Company
FABRICS
add outstanding wrinkle resistance, crease and shape retention, wear and trimness with easier maintenance. The fabrics listed below are all permanently marked on the reverse side for ready identification. For samples:
CHECK FABRIC
Tropical
Serge
Gabardine
Elastique
CHECK COLOR
Standard blue
French blue
Blue gray
Tan
And
Write to:
American Woolen Company
Uniform Department
225 FOURTH AVENUE, NEW YORK 3, N. Y.

Ryerson Steel Appointments

K. J. Evans

L. M. Bennett

JOSEPH T. RYERSON & SON, INC., national steel service organization, announces a number of new appointments in its marketing and public relations divisions, including Keith J. Evans as director of marketing and public relations, and Lowell M. Bennett as new advertising and sales promotion manager.

Associated with Ryerson since 1912, Mr. Evans last served as advertising and sales promotion manager in charge of market research, sales analysis, sales promotion, advertising and public relations. These five divisions will remain under his supervision. He was the founder and first president of the National Industrial Advertisers Association, organized in 1922, and is a member of the Association of National Advertisers, American Marketing Association, Chicago Industrial Advertisers Association, and the Advertising Executives Club of Chicago.

Mr. Bennett joined the company in 1951 after eight years as advertising and sales promotion manager of LaSalle Extension University, Chicago. Until recently, he had charge of Ryerson sales promotion.

Other appointments within the department include: J. H. Piltz, manager, sales analysis; Walter K. Creal, assistant manager, public relations; John W. Atkinson, manager, advertising production; Norman T. Redmond, editor, *Ryerson News;* Bertil E. Anderson, assistant manager, market research, and Miss O. B. Werner, supervisor, letter improvement program.

Located at 2553 W. 16th ST., CHICAGO 80, ILL., Ryerson operates 16 steel-service plants throughout the country. The firm was established in 1842.

write for
your NEW BEAVER
"QUICK ACTION" CATALOG

If you use pipe threading or cutting equipment this new catalog can help you!

Plain facts, clear pictures, concise descriptions and accurate prices on famous Beaver Pipe Tools . . . specially prepared for quick reference by busy utility and water works men. Well organized pages cover all Beaver units, including three Beaver Portable Pipe Machines and three Beaver Portable Power Units. Ordering information is clear. Don't wait! Write for your copy now. Address: BEAVER PIPE TOOLS, INC., 300-500 DANA AVENUE, WARREN, OHIO, U. S. A. —53 years of Highest Quality.

For Better Pipe Tools . . . Buy
BEAVER

It's True There are Other "Good" PIPE DETECTORS

and EACH ONE WILL PERFORM ALL THESE JOBS:

- Detect, trace and center pipe, cable, etc.
- Estimate depth
- Separate parallel pipe, cable and conduit

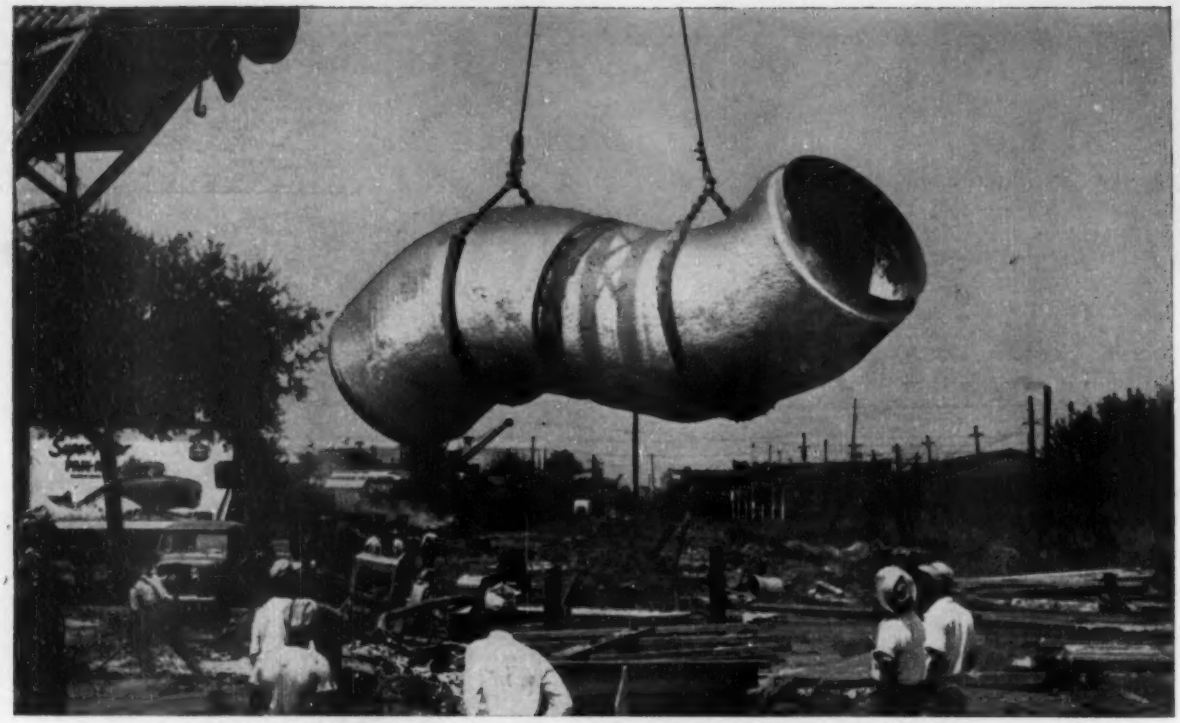
But...

before you buy a pipe detector from anyone — CHECK THESE IMPORTANT FACTS.

1. Is there a WRITTEN LIFETIME GUARANTEE?
2. Do you get a liberal TRADE-IN ALLOWANCE on your present used equipment?
3. Will they agree to in-the-field competitive testing on *performance—accuracy—reliability?* We think our pipe detector is best—others think theirs is. WHY NOT GET THE FACTS ON THE "505" PIPE DETECTOR and *COMPARE!!*

WRITE TODAY for the complete "505" story!!

THE Detectron CORPORATION, Dept. H
5420 VINELAND AVE., NO. HOLLYWOOD, CALIF.



Special curved section of 50-in. ID Bethlehem Pipe being lowered into trench in New Orleans.

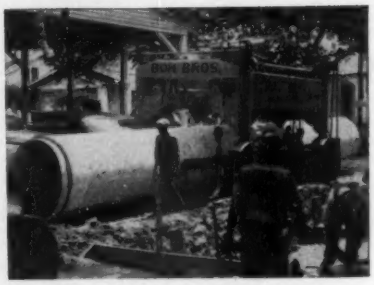
New Orleans Modernizes Water and Sewerage System with Over 94,000 Feet of Bethlehem Steel Pipe

To meet greatly increased demands caused by the city's tremendous post-war growth, the Water and Sewerage Board of New Orleans has installed almost 18 miles of large-diameter water and sewage lines.

This project began in 1948, when the Board accepted Bethlehem's bid to furnish about 13,500 feet of 50-in. ID tar-enameled steel pipe for the first section of a new feeder line. Today, New Orleans boasts nearly 60,000 feet of new 50-in. ID water mains, as well as 35,000 feet of sewage lines in diameters ranging from 24 in. to 50 in. ID. All of this pipe, together with a variety of T's, bends, reducers and flanges, was supplied by Bethlehem.

You'll find Bethlehem Tar-Enameled Pipe ideal for your water and sewage lines. It has great strength, shock-resistance and resilience. And its smooth, uniform lining of coal-tar enamel resists corrosion and incrustation, ensures a high rate of flow year after year. It is furnished in easily-handled 40-ft lengths, and in all diameters from 22 in. ID to the largest permitted by common carriers.

We suggest that you phone or write the nearest Bethlehem sales office for complete information about Bethlehem Tar-Enameled Steel Pipe.



Laying straight section of 50-in. ID pipe. Engineers on the job found the Bethlehem Pipe easy to cut and re-weld when obstructions were encountered.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM *Tar-Enameled* STEEL PIPE

Woven Measuring Tape Wears Longer

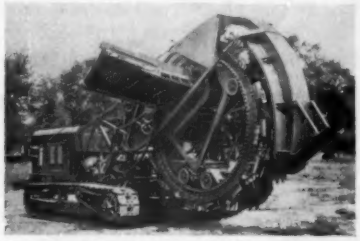
In street, highway, and general construction work where steel tape accuracy isn't necessary, and on special jobs that require a nonconductor, use a long-wearing, nonmetallic woven measuring tape made of tough fibers and covered with an abrasive-resistant, moisture-proof plastic coating.

The LUFKIN RULE CO., SAGINAW, MICH., offers you a high-quality woven tape that is lightweight and easy to handle. Woven of new, exceptionally strong fibers, it retains its dimensional stability—even after it is repeatedly soaked and dried. Markings are simple to read, and are protected by coatings of a specially compounded plastic that effectively resists abrasion, cracking, mildew, moisture and temperature changes.

Each Lufkin Hi-Line tape is housed in a leather case—hand-stitched over a rust-resistant coated metal liner. The first end of the tape, which is usually subjected to the greatest wear, is reinforced with durable green plastic, imprinted "Non-Metallic."

For a new folder describing the Hi-Line measuring tape, and listing lengths, markings available, and prices, address the manufacturer directly, or you may use the Post Card that is located on the colored page in this section. Circle No. 828.

Wheel-Type Ditcher Speeds Pipe Installation



The digging wheel of the Buckeye 315 is equipped with 15 standard buckets, while flat-bottom buckets are available as optional equipment.

A quick, easy way to dig ditches for oil and gas pipelines, storm sewers, main sewerage lines and systems, water mains, and cables and conduits is to employ the Buckeye model 315, a new, heavy-duty, wheel-type ditcher from Gar Wood Industries, Inc.

Digging to a maximum depth of 6 feet, the Buckeye 315 provides a variety of cuts ranging from 24 to 40 inches wide in steps of 2 inches. It has 8 digging speeds forward, from 1.37 to 20.49 feet a minute, with wheel and crawler speeds operating independently.

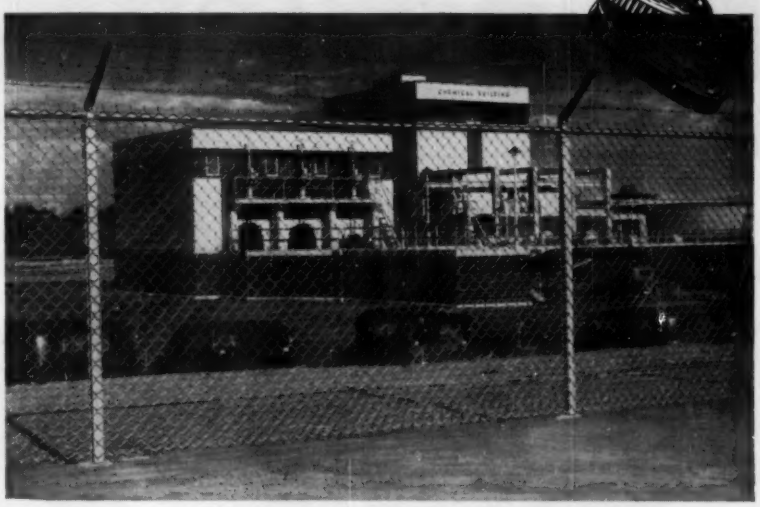
A heavy-duty diesel engine, 76 hp at 1,600 rpm, powers the new pipeline and utility ditcher, with a gas engine, 80 hp at 1,600 rpm, available as optional equipment. Cities can choose between two types of clutches, a Twin Disc fluid coupling in conjunction with over-center type friction clutch, or a Twin Disc single plate toggle type clutch.

The digging wheel of the Buckeye 315 is equipped with 15 standard buckets, each with easy-to-change rooter bits. A shiftable conveyor deposits soil on either side of the ditch. Six conveyor speeds range from 225 to 764 feet a minute, and all controls are within quick reach of the operator.

Additional information on the Buckeye 315 may be obtained by writing the Customer Service Dept., GAR WOOD INDUSTRIES, INC., 36253 MICHIGAN AVE., WAYNE, MICH., or use the Post Card on the colored page in this section. Circle No. 836.

REALOCK FENCE

saves you money



. . . Saves cost of extra guard personnel

. . . Cuts cost of ground maintenance

. . . Cuts down pilferage losses

. . . Makes possible lower insurance rates

. . . Guards against loss from burglary and vandalism.

Consult your classified telephone directory for nearest sales office or write to any of our three division offices for free estimate or catalogue.

THE COLORADO FUEL AND IRON CORPORATION—Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION—Buffalo

REALOCK FENCE
THE COLORADO FUEL AND IRON CORPORATION
CF&I
BRANCHES IN ALL KEY CITIES

2013

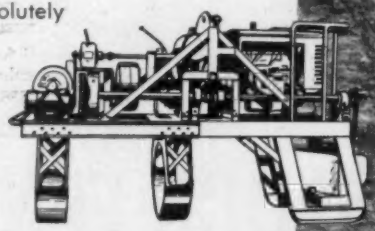
You don't have to stop traffic . . .

. . . to bore road crossings

with the **CROSE** *auger-type*

ROAD BORING MACHINE

Installs casing as boring progresses — eliminates cave-ins. Absolutely prevents settling of concrete slab highways or railroad beds. Extremely accurate in alignment. Adaptable to all sizes of casing from 3" to 34".



M.J. **Crose** *Manufacturing Co., Inc.*

2715 DAWSON ROAD • TULSA, OKLAHOMA

BRANCH OFFICES: HOUSTON • NEW YORK • NEWARK
EDMONTON • DENVER

EASTERN METAL

1 Source of Supply

For ALL Metal Signs

"Iron Cop"

You get these Advantages:

Immediate Delivery — over 1200 Types in Stock
Legible Lettering — Modern Designs
Official Legends — Approved by Dept. of Commerce
Long Lasting — Double baked enamel
Economy — Low cost; easy to install and maintain

Protect Your Children with the Eastern Metal "Iron Cop" — 6-ft. 4" Policeman silhouette in an official blue uniform mounted on a stable iron base; rolls into position easily by a school boy.

Eastern "A" Stand

Complete line of Highway Signs — reflectorized and plain; also heavy cast aluminum street signs, U-Type steel posts, and durable stanchions.

Send for Illustrated Folder and Price List.

Eastern "A" Stand Won't Blow Over
Folds and Locks in Place
Positive Protection to City Workmen

INDUSTRIAL • SAFETY • UTILITY • TRAFFIC
EM SIGNS

EASTERN METAL of Elmira, Inc. Elmira Hts. 1, N. Y.

ONLY Geerpres WRINGERS

(1) Have exclusive Interlock Gearing
(2) which multiplies wringer pressure
(3) to squeeze mops drier
(4) and eliminate all splash

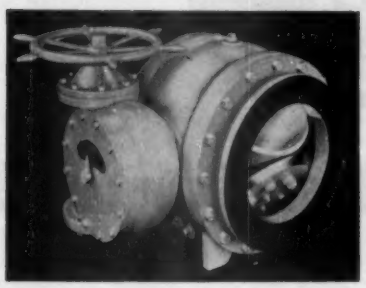
Fully guaranteed Available in two styles and three size ranges to meet all mop wringing requirements For further information write to:

GEERPRES WRINGER, INC.

Manufacturers of High Grade Mopping Equipment

P.O. BOX 658 • MUSKEGON, MICHIGAN

Shows New Line of Ball Valves at A.W.W.A.



The first national showing of Smith ball valves for water works, municipal and power-plant applications, will be held at the A.W.W.A. Convention, Civic Auditorium, Seattle, May 23-28, as the featured display in a new 400 square-foot exhibit being used for the first time by the S. MORGAN SMITH CO., YORK, PA.

According to Carl J. Wilcox, sales manager of the company's Valve Division, the new ball valve rounds out a complete valve line offered by the firm, which now includes Smith rotovalves, Smith babbitt-seated butterfly valves, and R-S rubber-lined butterfly valves.

Smith ball valves, manual type, are designed for 150 psi working pressures with 125 psi, A.S.A. flanges (C.I.). They include three principal parts: body, rotor, and operating mechanism, and stress ease and tightness of closure, multiplication of leverage, and complete freedom from vibration. In addition to standard-flanged ends, bell or plain ends may be furnished.

Complete information on the new line of ball valves is available directly from the manufacturer, or you may use the Post Card on the colored page in this section. Circle No. 826.

Fast, Low-Cost Way To Boil Garbage

Communities operating under state laws that require them to boil garbage before feeding it to swine, are offered a new, low-cost cooker that boils the garbage without mechanical agitation. No steam is needed to operate this cooker, and it works quickly boiling 230 gallons of garbage feed in 30 minutes; 500 gallons in only 45 minutes. Furthermore, this fast heating is combined with lower fuel costs.

Made by the Hauck Mfg. Co., the ew garbage-feed cooker burns kerosene or light furnace oil No. 1, or it may be supplied with a special burner for bottled gas. It is available in 115, 165, 230, 350, and 500-gallon capacities, and can be mounted on wheels with pneumatic tires, solid rubber tires or steel wheels. All sizes are available with built-on skids.

The main body of the cooker consists of an inner melting tank, set in an outer shell, the heat passing between the two. It is efficiently heated on the "bottom-fired" principle with double-heatpass, the heat traveling the entire length of the kettle, passing upward and returning to a single vent stack on top of the kettle.

Hauck garbage feed cookers can be stored in an unheated shed without danger of freezing. They are fully described in literature from the HAUCK MFG. CO., 124-136 TENTH ST., BROOKLYN 15, N. Y. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 833.

Gate rises when coin is inserted; lowers seven seconds after rear wheels clear treadle. (Remote control from drivers' seat available as optional equipment.)
Solve the parking dilemma . . . gain important new revenue

Install

SELF-SERVICE PARKING

USING EM-RO

coin-operated parking lot gates*

No wonder community officials, merchants, and shoppers are enthusiastic about this new, modern, low-cost method of off-street parking. Just look at its advantages:

- No car jockey or attendants necessary. Coin-activated gates rise automatically when coins are inserted.
- No additional policemen are required. One man can collect from and service as many as 50 parking lots per day.
- Em-Ro gates are easy to install, and entail no complicated service problems. New only in their application to parking lots, these gates have long been used by the railroads for grade-crossing traffic protection. The mechanism is foolproof.

*Can be leased for less than $3.00 per day, per gate —or purchased outright.

Before you change or expand your present parking setup, get complete information about Em-Ro gates. Write, wire or phone now. (24-hour switchboard.)

EM-RO DISTRIBUTORS

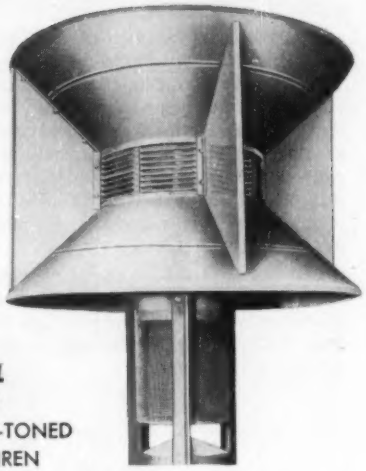
120 S. La Salle St. Phone RAndolph 6-4560
Chicago 3, Illinois

Prepare

or pay the forfeit!

Prepare now or you may forfeit lives!

A Civil Defense warning system does more than protect against a possible air attack. Few sections of the country are immune from natural disasters. Tornadoes have already taken their spring toll and the most dangerous season is not yet here. Seasonal storms, floods, fires, earthquakes and other disasters take an appalling annual toll.



FEDERAL
S-D 10
SUPER DOUBLE-TONED
VERTICAL SIREN

FEDERAL THUNDERBOLT
SUPER POWERED
DIRECTIONAL SIREN

Case histories of recent disasters have shown a reduced injury and death toll in those communities with a well organized Civil Defense and disaster program, especially where they had an adequate warning signal system. The great majority of American municipalities who have completed adequate preparations are equipped 100% with FEDERAL AIR RAID SIRENS!

FEDERAL SIGN and SIGNAL CORPORATION

FORMERLY: FEDERAL ENTERPRISES, INC.

8756 S. STATE ST., CHICAGO 19, ILL.

Improved Type of Traffic Control Wins Acceptance

The adoption of the "Trafficone" system by major cities throughout the country indicates the existence of an improved type of traffic control, the success of which is largely due to a wide educational program conducted over the past five years by the Interstate Rubber Products Corp.

According to Charles Terry, president of Interstate, the firm has not only been interested in introducing Trafficones as a modern method of traffic control, but it has also attempted to educate traffic and safety engineers in their proper use. "For only through a thorough understanding of the traffic control system," he points out, "can Trafficones be made effective and economical."

A technical 36-page manual, illustrating various methods of traffic control, detailed literature, magazine advertising, and other methods have been employed to bring the "Trafficone" system of traffic control to everyone's attention. Exhibitions in safety conventions have been one of the first-line methods of introduction to the trade.

Municipal officials not yet familiar with the "Trafficone" system, can get complete information by writing the INTERSTATE RUBBER PRODUCTS CORP., 908 AVILA ST., LOS ANGELES 12, CALIF., or take advantage of the Post Card on the colored page in this section. Circle No. 830.

BIRD DAMAGE IS COSTLY

ECONOMICAL SAFE

Bur-Co Bird Repellent does not harm birds. They instinctively dislike a sticky substance. No chemical reaction on building material. Does not harm humans internally or externally. Each application properly applied eliminates birds for at least one year. Write for prices and additional information.

POSITIVE HUMANE

BURR CHEMICAL CO.
3329 Auburn Rockford, Ill.

DISTRIBUTORS
AGENTS OR
SALESMEN
TO SELL
REVOLUTIONARY
SY-LOY
FIBERGLAS
Traffic Signs
To Cities, Towns, Counties

Some choice territories for Street Name Sign Sales available.

MUNICIPAL STREET SIGN CO., INC.
777-9 MEEKER AVE.
BROOKLYN 22, N. Y.

NOTE: Please refer this ad to any interested party.

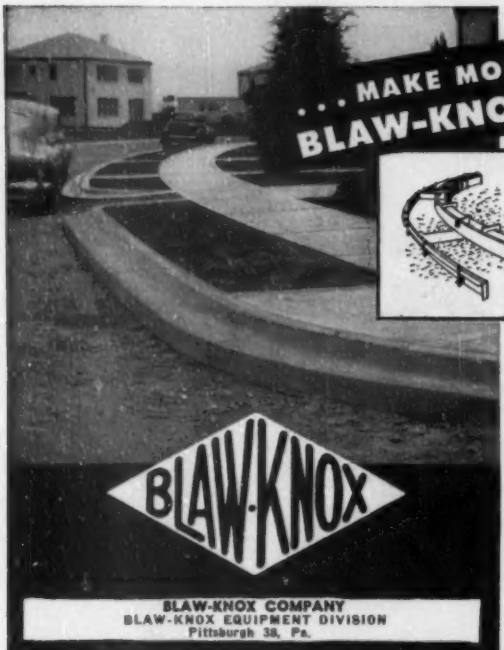
LEADITE
The Pioneer Self Caulking Material for C. I. Pipe

TABLE OF COMPARATIVE QUANTITIES

Nominal Inside dia. of pipe, in.	Depth of joint, Inches of Leadite	Approx. lbs. of Leadite per joint	Depth of joint, Inches of lead	Approx. lbs. of lead per joint
4	2.5	2.00	2.25	8.56
6	2.5	3.00	2.25	11.71
8	2.5	4.00	2.25	14.63
10	2.5	5.00	2.25	17.70
12	2.5	6.00	2.25	20.86
14	2.5	7.00	2.25	24.02
16	2.5	8.25	2.25	33.07
18	2.5	9.25	2.25	36.88
20	2.5	10.50	2.25	40.71
24	2.5	13.00	2.50	53.02
30	2.75	16.00	2.50	65.36
36	2.75	19.00	2.50	77.96
48	3.50	30.00	3.00	121.15
54	4.0	38.00	3.00	135.60
60	4.0	42.00	3.00	150.70

THE LEADITE COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.

No Caulking



. . . MAKE MORE PROFIT ON JOBS LIKE THIS WITH
BLAW-KNOX CURB AND GUTTER FORMS

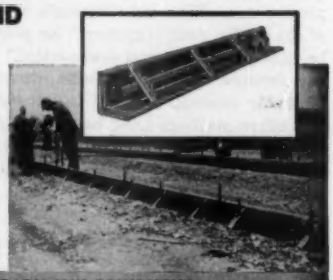
WHATEVER kind of street paving work you have, from curved or serpentine shapes to simple straight work, Blaw-Knox Steel Curb and Gutter Forms make money on every job. Easy to set and strip, they complete the job faster and well within your estimate. Costly hand finishing is eliminated. You not only save on materials and carpentry labor, but finished jobs have a perfection impossible to achieve with wood forms. The same forms can be used over and over for a wide variety of work. Ask your Blaw-Knox distributor about the "Complete Package" of Steel Forms for low-cost construction of concrete curb, curb and gutter, integral curb and sidewalk.

BLAW-KNOX

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
Pittsburgh 38, Pa.

BLAW-KNOX ROAD AND AIRPORT FORMS

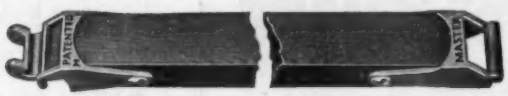
You can be sure of more rapid form setting, *always true to line and grade,* with Blaw-Knox Heavy-Duty, Self-Aligning Steel Forms. Available in heights of 8" or more, or in Dreadnaught Forms when less than 8" height is required. Heavy-Duty 12" x12" Forms and Airport Paving Forms in sizes above 12" are designed especially to meet the thicker paving slab requirements of modern airports.



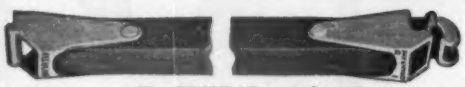
ASK ABOUT THE BLAW-KNOX *"Complete Package"* OF CONCRETE PAVING AND READY-MIX EQUIPMENT

SURE GRIP SEWER RODS and ACCESSORIES

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



The MASTER, a heavy duty rod,
Fir stock 1½ x 1½ inch square.



The REGULAR, a light rod,
Fir stock 1¼ x 1¼ inch square.

Write for catalog on complete line of sewer cleaning equipment.

EXPANDING SEWER MACHINE CO.
NAPPANEE, IND.

Is Your City Up-to-Date in Its Operation Methods?

THE AMERICAN CITY
470 Fourth Ave., New York 16, N. Y.

Please send me ..... copy (copies) of your Municipal Official's Handbook (Price per copy is $3.00)

A check covering this order is enclosed ..... Please bill me ..... (Check one)

Name .....

City or Company .....

Address .....

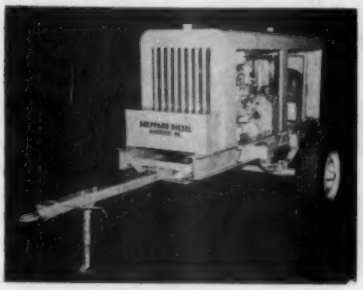
City..... Zone..... State.....

A good way to find out is to read about the practical experience of other city officials who have problems like yours. This experience is described in the "Municipal Official's Handbook" by William S. Foster, Engineering Editor of *The American City.* The latest methods on street construction and maintenance, snow removal, street cleaning, and refuse collection and disposal are explained in detail. Write us today for your copy.

Purchasing

Trailer-Mounted Electric Generator

A portable diesel generating set, mounted on a steel, rubber-tired trailer, provides city emergency crews and civil-defense organizations with a dependable source of emergency power. The packaged unit is self-contained, consisting of a Sheppard full-



diesel engine coupled with a 10 or 15 kw generating set. All controls are housed in sheet metal, and the trailer is quickly transported by jeep or light truck.

Communities interested in stand-by protection against power failure, can tie the Sheppard unit directly into their main power sources. In such installations, the Sheppard automatic controls activate the generating set the instant power fails, furnishing immediate power for operating radios, radio-phones, and other important equipment. The close regulation possible is helpful in those applications which stress close modulation and frequency regulations.

A complete description of the new diesel generating set is available from the R. H. Sheppard Co., Inc., Hanover, Pa., or use the Post Card in this section. Circle No. 845.

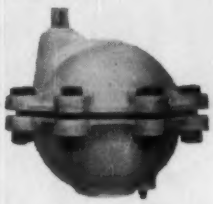
New Foxboro Plant

The Foxboro Co., manufacturers of industrial instruments for process measurement and control in water and sewage treatment, reports the completion of a new branch factory at 11710 E. Northwest Highway, Dallas, Texas. This building will provide some 13,000 square feet of space for increased manufacturing activities, service and repair, and centralized warehousing of instruments and control valves.

Located in the industrial section of Dallas, the new plant is expected to facilitate rapid delivery and service to industries throughout the South and Southwest. Main offices of the company are located at Foxboro, Mass.

IT'S SIMPLEX– IT'S ACCURATE

Reliable measuring and controlling equipment

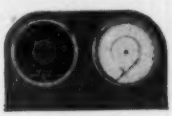


AIR RELEASE VALVES
Vent air accumulations to eliminate air binding at high points and increase pumping efficiency. Simple, rugged 1" and 2" sizes for up to 250 p.s.i. Special valves available for up to 800 p.s.i.

AIR INLET VALVES
Prevent collapse of thin-walled pipes with sudden pressure drops in gravity lines. Simple, reliable float control quickly admits air to break vacuum. Available in 4" to 10" sizes.

PITOT EQUIPMENT
Leaks and line breaks are quickly located with Simplex pitot rods, manometers and recorders. Light-weight, compact design makes them truly portable. Invaluable for overall survey of distribution system's efficiency.

VENTURI TUBES for accurate measurement of hot or cold water, gases, air, sewage, sludge or trade wastes under a wide range of pressures. Available in many sizes and designs – in cast-iron, cast steel or steel plate, bronze or combinations to suit your needs.



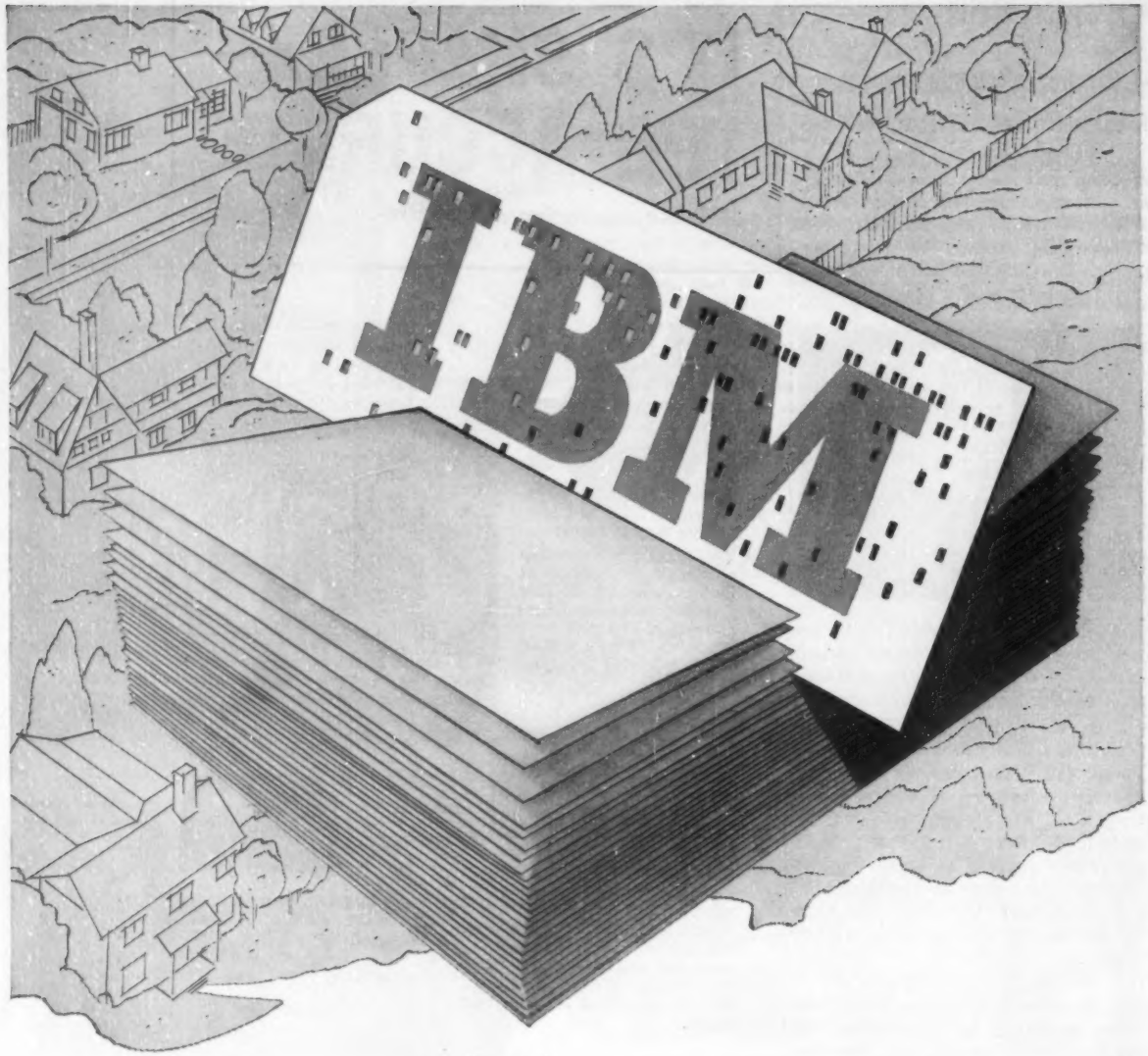
FILTER GAUGES indicate and/or record essential data on rate of flow, loss of head and sand expansion. Furnished for operating table or floor stand mounting.

TYPE H METER—Mercury-float type indicating, recording and totalizing unit. Gives ±2% accuracy at any point over flow ranges as wide as 13 to 1. Evenly spaced gradations make accurate readings easy. Available for wall, panel, or floor stand mounting.

FLOW CONTROLLERS
Maintain constant flow regardless of variations in head of filter effluent or wash water. Control within ±3% over 5 to 1 range. Exclusive, balanced guillotine valves quickly respond to slightest pressure differential. Standard sizes from 3" to 24".

Interesting Bulletins
Write for full details today
Simplex Valve & Meter Co.
6789 Upland St., Phila. 42, Pa

SIMPLEX®
VALVE AND METER COMPANY

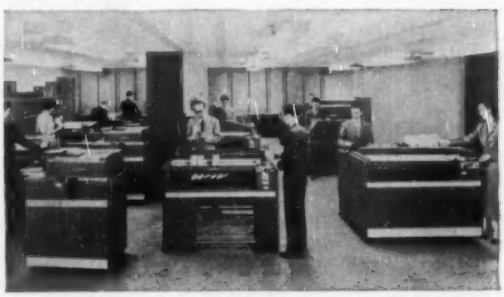


How to Cut Tax Work in Half!

This is good news for tax collectors and assessors. In actual recorded cases, IBM Service Bureaus, using punched card techniques, have cut tax accounting burdens as much as 50%!

Field books, assessment rolls, tax computations, tax bills, collection reports, and allied records are produced automatically on fast IBM machines —resulting in a substantial saving of time and money.

Town officials and citizens react enthusiastically to the speed and accuracy of this modern and economical approach to tax accounting. Two particularly strong points are the completeness of information on the tax bill and its neat appearance. And the convenient locations of 115 IBM Service Bureaus make this tax accounting service even more appealing. Call the local IBM office for details.



IBM
TRADE MARK

INTERNATIONAL BUSINESS MACHINES
590 Madison Avenue, New York 22, N. Y.

Lights Exterior of Municipal Buildings

Exterior lighting for public areas and buildings is provided by the No. 415, a new outdoor lighting unit that differs considerably from conventional brackets and lanterns. Its metal parts are constructed of die-cast aluminum with a lacquered finish, and its double thick prismatic refractor and functional bracket-hood are perfectly proportioned.

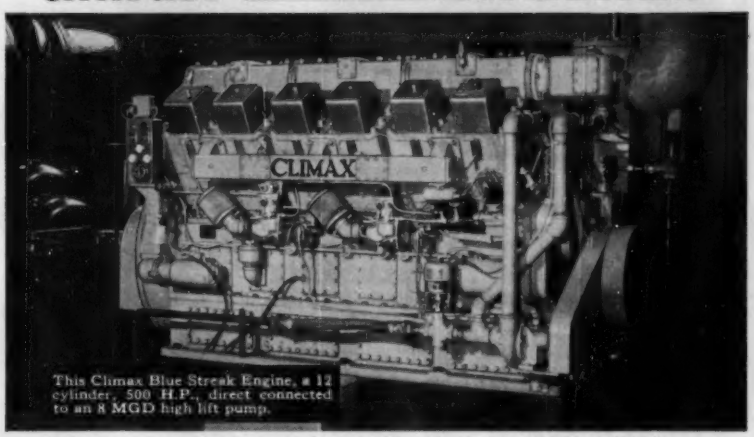
The glass assembly of the No. 415 is composed of hundreds of glass prisms built to optical standards to direct the light downward and outward. This assures wide coverage, and produces a uniformly lighted appearance free from dazzle and dark bands. The hood is immune to changing weather conditions,

and the entire assembly is impervious to dust and rust.

Relamping the new outdoor lighting unit is simple. You have only to loosen the door screws, and the glass assembly swings open on the concealed hinge.

Write the HOLOPHANE CO., INC., NEWARK, OHIO, for complete information, or you may use the Post Card on the colored page in this section. Circle No. 862.

SHEBOYGAN PROVIDES ITS OWN INSURANCE
With
climax BLUE STREAK ENGINES



This Climax Blue Streak Engine, a 12 cylinder, 500 H.P., direct connected to an 8 MGD high lift pump.

In the modernization and electrification of its Water Works, to insure complete protection in case of fire, power failure, or other emergencies, the City of Sheboygan installed 3 Climax Blue Streak Gasoline Engines.

One is a 6 Cyl., 160 H.P., 1300 RPM engine and is connected to an existing 14 MGD low lift centrifugal pump, through a speed reducer.

Another Climax Blue Streak, a 12 Cyl., 500 H.P., 1200 RPM engine is connected through a quick detachable coupling to an 8 MGD high lift pump, normally driven by an electric motor at other end of pump.

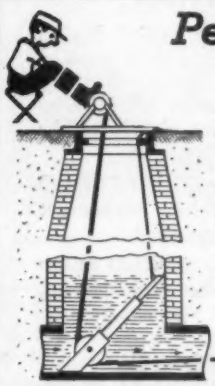
The third, a 12 Cyl., 600 H.P., 1200 RPM engine is connected through a quick detachable coupling to a 10 MGD high lift pump, normally driven by an electric motor at other end of pump.

Planned and Supervised by: Jerry Donohue Engineering Co.
Sheboygan, Wisconsin

climax

FOR COMPLETE INFORMATION, WRITE TO . . .
ENGINE AND PUMP MFG. CO.
208 So. La Salle St.
CHICAGO 4, ILLINOIS
Factory–Clinton, Ia. *District Office*–Dallas, Tex.

Periodic Cleaning with the
WAYNE BALL



REDUCES STOPPAGES up to 90% by removal of Sand, Gravel, Rocks, Bricks, Mud, Grease, Roots, etc. Controls Sulphide Generation and Odors. Maintains Stability and Assists Materially in the Control of H_2S Gas.

Noisy Manholes Silenced with Sidu Rubber Manhole Cushions

No Machines, Cables, Augers and Rods Developed by Sewer Men for Sewer Men

THE SIDU COMPANY
Sewer Cleaning Tools ***Rubber Manhole Cushions***
BOX 3337 · LONG BEACH, CALIFORNIA

NO RAMMING OR JAMMING! NO SPINNING OF WHEELS WHEN LOADING BULKY OR "PACKED" MATERIALS

LESSMANN LOADALL

DIGS IN WHILE STANDING STILL!

Check these features!

- **STANDARDIZED PARTS.** Ford, Timken, Vickers, Bendix, etc., assure highest quality components and low-cost servicing.
- **SAFETY.** Operator has unrestricted visibility and is protected from loader arms.
- **EASY HANDLING.** Full reverse shifting gives LOAdALL four speeds forward and four reverse. Three simple, conveniently located hydraulic controls assure efficiency.
- **LOW COST.** You save on first cost, operating costs and maintenance costs with a LOAdALL.
- **LOAdALL BUCKETS.** Available with capacities of ⅝, ¾, ⅞, 1, 1¼ and 1½ yards.

A HIGHLY MANEUVERABLE POWER SHOVEL

Lessmann LOAdALL scoops up big loads of the most heavily compacted soils, cinders, aggregate, etc. . . . does it in 5 seconds while standing still! Extra hydraulic cylinders supply Hydraulic Power Crowd. This means *loading* with hydraulics which eliminates ramming and spinning of wheels . . . *minimizes repairs, reduces maintenance!* Dozer blade is easily attached for grading, backfilling. Crane-hook, lift forks, snow and trash buckets are also available.

9 FT. DUMPING CLEARANCE

LOAdALL has clearance for the highest trucks, bins and mixing hoppers. It loads or unloads at any height from 12″ below wheel level to 108″ above. Wheelbase of 73″ and 12′ turning radius make it highly maneuverable.

52″ REACH

Here's a full 4′4″ reach at maximum clearance! LOAdALL carries load close but quickly boosts it *'way out ahead* for easier loading . . . another advantage of Hydraulic Power Crowd.

HYDRAULIC POWER-CROWD

LESSMANN MANUFACTURING COMPANY

Affiliate of United Steel Barrel Co., Philadelphia—Wilmington, Del.

2008 Easton Blvd., Des Moines 4, Iowa

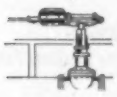
Write for Complete Information TODAY!

More Power to You *with* PORT-A-PONY

Everybody knows Port-A-Pony is the ideal portable power pipe threader for threading ⅛″ to 4″ pipe in the shop or field, but . . .

Did you know —

Port-A-Pony will drive low speed winches used to pull electric cable through conduit?



Did you know —

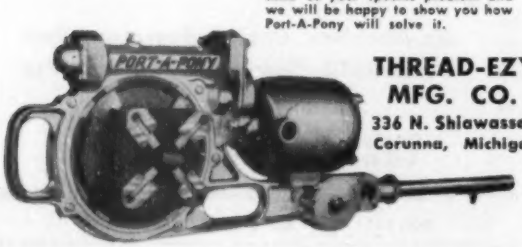
Port-A-Pony will open and close large gate valves doing the work of several men in a fraction of the time?

Did you know —

Port-A-Pony will drive flexible or rigid shafts replacing power take off units?

Yes, Port-A-Pony is built ruggedly with a ½ H.P. reversible motor whose power is converted into torque by the case hardened bronze ring gear that never fails.

Send us your specific problem and we will be happy to show you how Port-A-Pony will solve it.



THREAD-EZY MFG. CO.

336 N. Shiawassee

Corunna, Michigan

"PIONEER PATHWAY"

Along historic Oregon Trail, Nathaniel Wyeth in 1834 founded Old Fort Hall, now Pocatello, Idaho. Pocatello is Shoshone Indian for "He who does not follow the beaten path". Modern Pocatello honors its founder but clearly marks its "paths".

In many interesting locations you'll find ***FERRO*** signs . . . visible day or night; permanent porcelain enamel fused on finest steel.

On any street, road or highway, ***FERRO is the sign of good government.*** For full details, write

FERRO ENAMELING CO.

1100 Fifty-Seventh Ave., Oakland 21, Calif.

Ohio Switches to Red Stop Signs

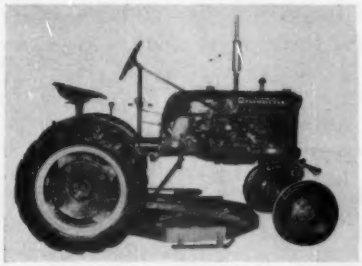
New red stop signs will replace nearly 30,000 yellow stop signs on Ohio's rural state highway system, reports S. O. Linzell, director of the Ohio Department of Highways. The yellow signs, which are still legal and in force, will be replaced gradually to avoid excessive cost.

According to C. W. McCaughey, the Highway Department's deputy director of operations, the red stop signs are being made in accordance with provisions of the revised Code of Ohio, dealing with the Manual of Traffic Control Devices. Minimum size of the new sign is a 24- x 24-inch octagon, with the word stop at least one-third the height of the sign face. On rural state highways, a larger, 30- x 30-inch, sign is specified.

White letters and a white border will be used on a red background, continued Mr. McCaughey. "The word STOP must be reflectorized and the red background may be." Yellow signs have black letters and a black border and, in this case, the yellow background may be reflectorized.

The recent proposed change in the color of Ohio stop signs followed a unanimous recommendation advising the use of red signs by the traffic subcommittee of the American Association of State Highway Officials to a joint committee composed of members of the A.A.S.H.O., the Institute of Traffic Engineers, and the National Conference on Street and Highway Safety.

New Rotary Mowers for International Tractors



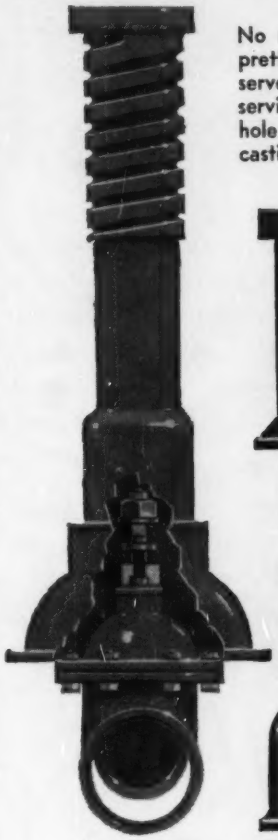
International Harvester Co., Chicago, Ill., recently approved two new rotary mowers for use with its Cub and Super "A" tractors. They are the models 42C and 42A machines, both offered by Wood Brothers Mfg. Co.

Model 42C, designed for the Cub tractor, and the model 42A for the Super "A" tractor, are both equipped to cut a 42-inch swath, and may be mounted underneath the tractors and slightly offset to the right. This permits mowing close to buildings, curbs, and fences. The units will operate in parks and on public grounds, mowing heavy weeds and brush. They include the same spindle assemblies and blades as are used on the company's larger mowers.

Available as optional equipment with either mower is a new leaf-mulching attachment, which eliminates the slow, costly job of raking, hauling and burning leaves. This leaf mulcher, along with the two rotary mowers, is contained in the International Harvester *Special Duty Equipment Manual.*

For additional information on models 42C and 42A, address the Wood Brothers Mfg Co., Oregon, Ill., or you may use the Post Card on the colored page in this section. Circle No. 818.

"BUFFALO" Municipal Castings come in every size and style!



No matter what your needs may be, you're pretty sure to find a "Buffalo" casting to serve the purpose, whether it be in valve, service or roadway boxes, meter boxes, manhole rings & covers, or other municipal castings.

If you need special castings, either gray iron or non-ferrous, let us give you a quotation.

BUFFALO PIPE & FOUNDRY

3 pc. screw type 5¼" valve box

2 pc. sliding type adj. 5¼" valve box

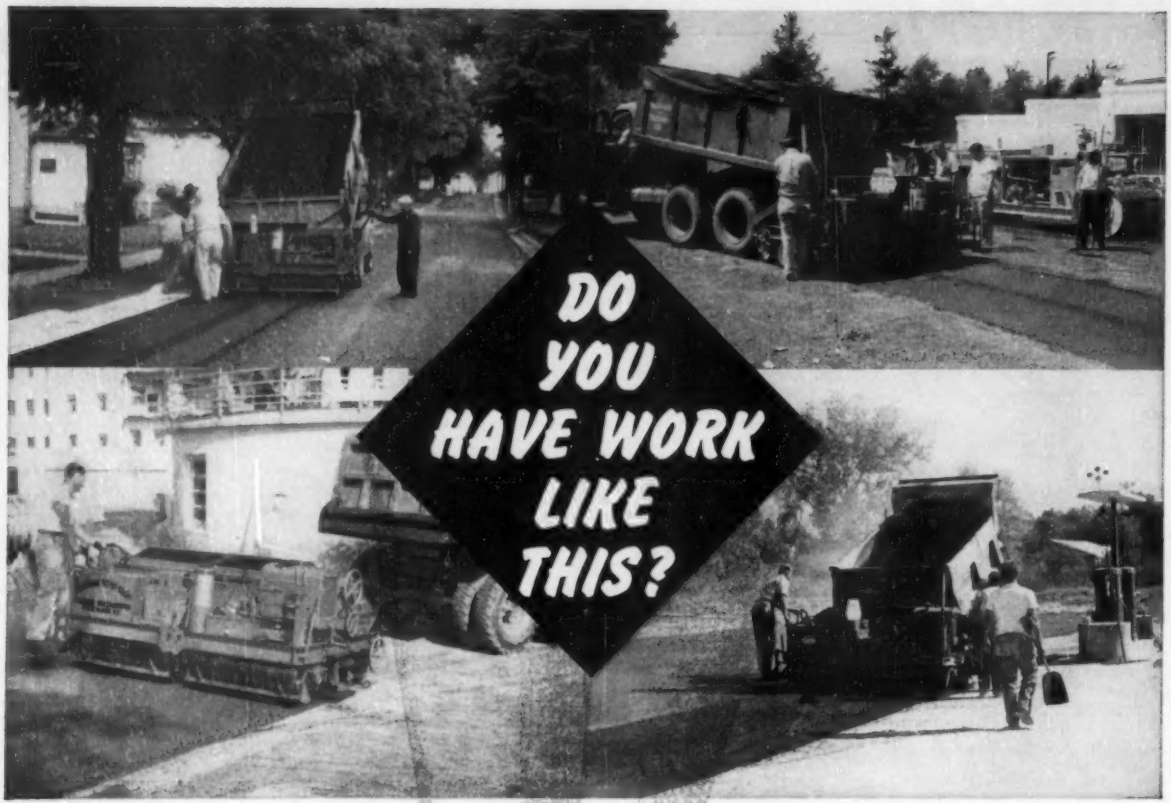
2½" water or gas ext. service box

Extra Heavy Traffic 2½" or 3" service box

All the new designs of "Buffalo" boxes are interchangeable with older "Buffalo" boxes—another big advantage of always insisting on "Buffalo" municipal boxes and castings.

Write or wire Dept. J for Bulletin M11

BUFFALO PIPE & FOUNDRY CORP.
BOX 55—STATION B DE. 6764 BUFFALO, N. Y.



VILLAGE AND CITY street work, parking lots, driveways, service stations, tennis courts, non-specification asphalt pavements of all kinds!—That's the place for your Adnun Jr., Model 8 Black Top Paver.

The Adnun Jr. is built to give you long life, trouble-free service in miles of work. It will spread any dry or bituminous material. Every bearing is anti-friction, transmission gears have cut teeth and run in oil. All design follows the pattern and quality of larger machines built for state road work.

The Adnun Jr. is self-maneuvering without load. Power Raker Bar and Oscillating Cutter Bar are standard equipment. Overlapping action of Cutter Bar compacts joint and reduces raking. Dual control facilitates handling. Smoothness of course is assured by Continuous Course Correction feature.

The Adnun Jr. makes those non-specification jobs more profitable. It saves time and labor for you and gives you a sales point with the customer because you deliver his job faster. Ask our sales agent for complete details.

ADNUN JR
MODEL 8
BLACK TOP PAVER

BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1904 State Street
Nunda, New York

BLAW-KNOX

Purchasing

New Street Broom Wears Longer

Plastic bristles that won't soften in water are an important feature of this new push broom for sweeping city streets. These bristles are made of strong, Bakelite styrene monofilaments that effectively resist water, oils and grease, and are unaffected by mould, mildew and rot. The fibers never mat, and are easily dipped clean in warm suds.

Flared out from the ends of the broom, the plastic bristles fit into difficult corners, cleaning close to the street curbing. They are securely set in a lacquered honey-maple block with long handle attached.

EMPIRE BRUSHES, INC., 200 WILLIAM ST., PORT CHESTER, N. Y., makes the new push broom. For full information write the company directly, or you may use the Post Card on the colored page in this section. Circle No. 866.

PREMAX

We Are Twins By Legibility

HOUSE NUMBERS That Are Easily Read

It doesn't matter whether you specify a Premax Roman House Number or the Deluxe type that carries its own background, they are sharp, clean-cut and easily read under all conditions. Send for sample and prices before you complete regulations for city-wide numbering.

PREMAX PRODUCTS
DIVISION CHISHOLM-RYDER CO., INC.

5443 Highland Ave., Niagara Falls, N. Y.

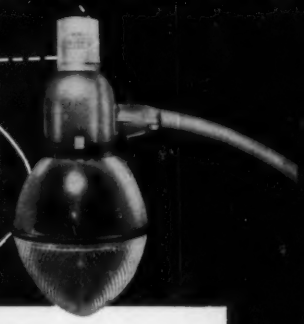
When you think:

Fully Automatic Light Control

You should say:

LUMATROL® PHOTOELECTRIC LIGHT SWITCH

NEW! OMNI-DIRECTIONAL SENSITIVITY—INTEGRATES LIGHT FROM ALL DIRECTIONS!



Here's Why:

In simplicity, efficiency, and continuing low cost, the LUMATROL Photoelectric Light Switch is unmatched by any other light control device!

A Few Facts:

The LUMATROL Photoelectric Light Switch rates first on all twelve specifications normally applied to this type control. These include size, weight, volume, sensitivity, time delay, power consumption, safety, number and type of parts, and method of installation.

Most Important:

LUMATROL is sensitive to the average of existing light, integrating it from all directions. This exclusive feature greatly increases both efficiency and economy of the lighting system. Installation is quick and simple . . . just plug it in . . . and there are no relays, no mercury switches or troublesome condensers to maintain.

WRITE FOR TECHNICAL BULLETIN

micro balancing
INCORPORATED
GARDEN CITY PARK, L. I., NEW YORK
® Trade Mark Reg. U.S. Pat. Off.

In the Palm of Your Hand...

the answer to your sanitation problems

SOLAR...
the original and still the BEST

Solar—the self-closing waste receptacle is the solution to all your waste disposal problems. Solar has no springs, weights, or hinges—nothing to repair or replace. There is only ONE moving part—the free-swinging top. Silent in operation and built to withstand tough usage, Solar cuts cleaning costs, reduces fire hazards, is always safe to use. Send for free illustrated literature today. *Buy Solar And You Get The Best.*

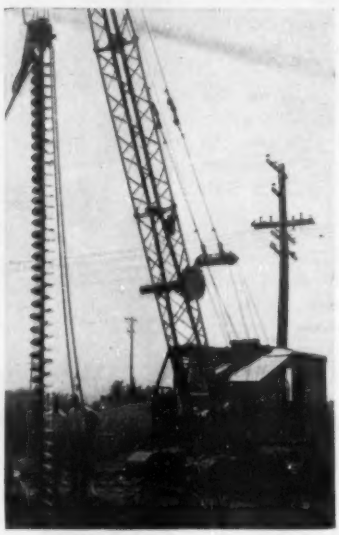
SOLAR-STURGES MFG. DIV.
PRESSED STEEL CAR COMPANY, INC.
MELROSE PARK, ILLINOIS DEPT. 5-D

Please send me complete information about the new line of Solar Self-Closing Waste Receptacles.

NAME
FIRM NAME
ADDRESS
CITY ZONE STATE

SOLAR-STURGES MFG. DIV.
Pressed Steel Car Company, Inc.

SAVE—time
SAVE—labor
SAVE—money
with KA-MO
PORTABLE DRILLING EQUIPMENT



Suspend this unit from your crane boom or derrick truck

Drill for concrete piers, shallow wells, elevator shafts—prebore for piling

Drill for foundations inside of a building or under foundations of building

KA-MO drills in places inaccessible to other boring equipment. Necessary accessories can be furnished to convert any motor (air or electric) from vertical to horizontal drilling.

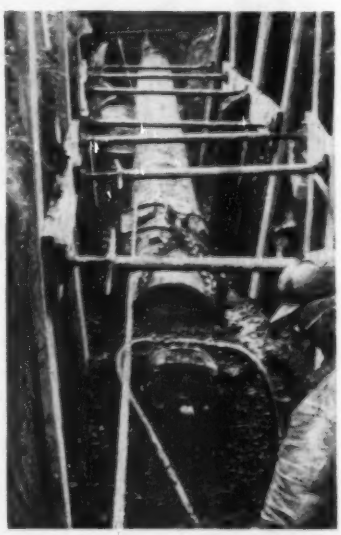
Horizontal Boring for
water, sewer, oil and gas pipelines, electric conduits — under streets—highways—sidewalks—lawns—railroad beds, etc.

When drilling inside casing, drill and casing move forward at the same time—or—drill without casing—clean sewers, culverts.

Drills from 2½" to 48" dia. and lengths to meet your needs.

POWERED by
Air Motors from 4 H.P. to 18 H.P.—in dual or triple drives to 45 H.P.

Electric Motors from 1.9 H.P. to 100 H.P. or Gas Engine Drive



Let us suggest a solution for your drilling problems. Call or write

669

KA-MO TOOLS, INC.
1845 S. 55th Ave., Cicero 50, Ill. (Chicago Suburb)
TOwnhall 3-8073

Purchasing

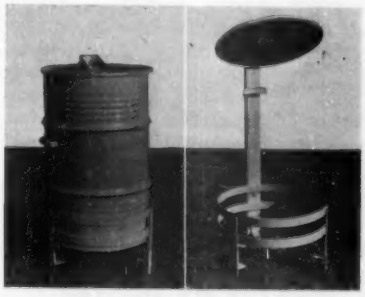
Kills Weeds Faster

Sprayed, sprinkled, or used as a dry powder, the Dolge N P weed killer acts quickly eliminating weeds and grass for an entire growing season or longer. Unselective, it kills most forms of vegetation on contact, following through by translocation to finish the roots. It minimizes regrowth and, in heavy doses, sterilizes the soil.

The new weed killer dissolves quickly in water, and may be kept in suspension without complex agitating equipment. A built-in wetting and spreading agent wets the waxy surfaces of plants and increases contact and penetration into the leaves and stems of unwanted plant growth. The powder is also nonflammable, nonvolatile, and incapable of corroding.

Full information on this easy way to get rid of weeds and grass is obtainable from the C. B. Dolge Co., Westport, Conn. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 840.

Easier Park Maintenance



A discarded oil drum completes this stand-and-cover combination unit.

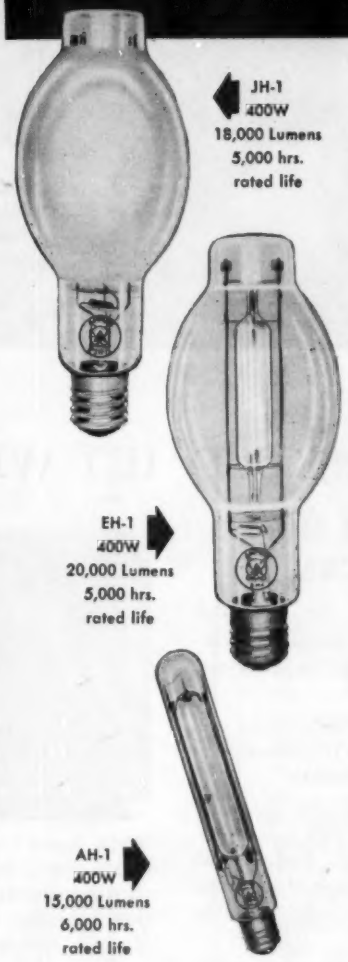
Keep the parks in your community looking neat and attractive and, at the same time, decrease maintenance costs by installing these new refuse container stand-and-cover combination units, recently introduced by the Progress Mfg. Co., Arthur, Ill.

The waterproof stand, designed for use with containers or any discarded 30- or 55-gallon oil drum, won't rust and can't tip over. It can even be set in concrete to prevent vandalism. In addition, the stand is painted to harmonize with its surroundings, enhancing the appearance of your park.

For a detailed description of the new refuse container stand-and-cover combination unit write the manufacturer directly, or use the Post Card in this section. Circle No. 823.

STREET LIGHTING GOES MODERN!

WITH AMPLEX MERCURY VAPOR LAMPS



TWICE AS MUCH LIGHT for the same wattage consumed... double the illumination with no boost in the lighting bill. Burning life several times longer than incandescents. That's what municipalities and utilities get with the new Amplex Mercury Vapor Lamps for street lighting... and it adds up to completely new lighting efficiency and extraordinary economies.

Amplex Mercury Vapor Lamps are made in three types, the ever-popular EH-1 and AH-1, and the highly important new JH-1 which is color-corrected by means of a special phosphor coating that produces a warm, neutral light and abolishes all need for color-correcting incandescents. Performance facts of all three lamps are shown under their respective illustrations.

For the full story on Amplex Mercury Vapor Lamps and for detailed information regarding their practical application, write **Amplex Corporation, Department K-5, 111 Water Street, Brooklyn 1, New York.**

AMPLEX

Sealed-Beam Reflector Lamps, Colorbeam Lamps, Spotlites and Floodlites, Industrial Infra-Red Heat Lamps, Vibration and Rough Service Lamps, Street Lighting Lamps, Traffic Signal Lamps, Incandescent Lamps, Fluorescent Tubes, Display Accessories.

They can't keep up with her

They can't even keep close—

In one minute the girl at the Recordak Microfilmer will make a photographically accurate and complete record of 200 letter-size documents.

You could add two hundred clerks to the staff shown above . . . quadruple their transcription speed, and it would still be no contest.

This will give you an idea of how slow and costly manual transcription really is—with pen, typewriter, bookkeeping machine, etc. And why 65 different types of business, thousands of concerns, are now using Recordak Microfilming to simplify their record-keeping routines.

In some of these routines, only a few words or figures on a record were being transcribed manually. Still Recordak Microfilming saved money —*lots*. For this truly amazing process gives you pictures for a fraction of a cent apiece. And, remember, they're error-free.

It will certainly pay you to double-check with a Recordak Systems Man soon. He has hundreds of case histories at his finger tips. And the chances are he can point out how costs have been cut on jobs similar to yours.

"Recordak" is a trade-mark

Write today for complete story—including facts on the line of Recordak Microfilmers designed for all requirements, all budgets. Recordak Corporation (Subsidiary of Eastman Kodak Company), 444 Madison Avenue, New York 22, N. Y.

RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming—and its application to government routines

Purchasing

Standardized Distributor Paves Streets for Less

An important innovation in the manufacture of bituminous distributors that should assure greater benefits to every street department, is reported by D. O. Paulson, president of the Municipal Supply Co. This firm is now offering a new, standard-type distributor, complete with identical tank structures, operating controls and unit assemblies. Prefabricated tank assemblies are immediately available, and the standard parts and controls have successfully speeded delivery and lowered costs.

The operator of the standard South Bend distributor has full control at all times. The unit holds the materials at an even temperature, and a triple spray pattern insures full coverage with sharp edges. Lateral movement of the spray bar (8 inches to either side) enables the operator to cover irregular areas. The spray widths range from 2 to 24 feet to accommodate any street, and the swing-up section and hydraulic lift make it easy to clear obstructions.

The tank suction feed line begins at the sump and is directed into a 4-way lever-operated, central-control valve. This control system permits discharging through spray bars, pumping material into the distributor tank, circulating material in the tank, pumping from the distributor into any other receptacle, pumping through a hand-spray hose, or using as a transfer unit without pumping into the distributor tank.

For information on the new distributor write MUNICIPAL SUPPLY CO., SOUTH BEND 23, IND., or use the Post Card in this section. Circle No. 824.

New Texas Plant For Marlow Pumps

MARLOW PUMPS, Div. of Bell & Gossett Co., announces the opening of a new branch manufacturing plant at Longview, Texas, some 125 miles east of Dallas. The Longview plant is expected to provide customers with faster service, cutting average shipping time about 30%, and will enable the company to shut down all operations at its plant in De Queen, Ark.

Marlow's complete line of engine-driven self-priming and end-suction centrifugal pumps will be manufactured at the Longview plant, and full service facilities will be available. The company's main offices are located in RIDGEWOOD, N. J.

...THOMPSON *Servisafe*

POLE UNITS PROVIDE OUTSTANDING
ECONOMY . . . SAFETY . . . BEAUTY

Efficient, safe, ground-level maintenance for street and parkway luminaires is guaranteed with Thompson "Servisafe" pole units. Single and double-arm models are available for use with all standard pendant type lighting fixtures.

Featuring a patented disconnecting and lowering mechanism, these easy-to-operate assemblies completely eliminate pole climbing. There are no electrical hazards for maintenance men because the lowered luminaire is "dead".

In addition, the new Thompson "Servisafe" pole units permit greater luminaire mounting heights, long recognized as necessary for improved area illumination but restricted to date by the available types of servicing equipment.

A variety of new, tapered steel and aluminum poles can be supplied to meet every application.

Write for Catalog PB-53 for complete details.

1998-TE

THE THOMPSON ELECTRIC CO.

1120 POWER AVENUE • CLEVELAND 14, OHIO

more power

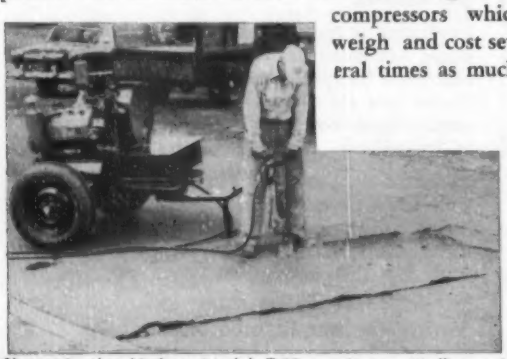
ANOTHER PORTABLE

LINDSAY AIR COMPRESSOR

NOW—you can get an air compressor that will run a medium size paving breaker at full capacity yet is so portable it needs only one or two men (not a whole crew or truck) to get in position and operate. This heavy duty Lindsay Model T-55 is especially designed for rugged digging and drilling. Is priced to meet the budget of the small town as well as the large. This Lindsay compressor will do much of the work often assigned to compressors which weigh and cost several times as much.

QUICK FACTS ABOUT THE LINDSAY MODEL T-55.

- Most portable in its class
- Large storage box for tools
- Torsion spring mounting
- Direct fan cooling



Shown is the Lindsay Model T-55 running a 60 lb. paving breaker cutting the heavy pavement prior to opening a service trench.

P. K. LINDSAY COMPANY
97C Tileston St. Everett 49, Mass.

Hawkins TWIN FLASH

MOBILE STREET SIGNAL

Wheel it **quickly and easily** to a school crossing or other spot where crowds gather (such as at a ball park, county fair or auditorium). With its **two lights flashing alternately** left and right, it gives adequate protection to street-crossers, while **saving man-hours and money.** Other wordings available include "SCHOOL CROSSING. Stop When Occupied."

Write for Circular

This is only one of this Company's large line of TRAFFIC SAFETY DEVICES, which includes traffic signs, reflectors, steel sign posts, striping equipment, parking meters, guide posts, etc.

Territories open for distributors

HAWKINS - HAWKINS COMPANY
1255 EASTSHORE HIGHWAY BERKELEY, CALIFORNIA

MURDOCK'S CAN TAKE IT!

- Made of rugged brass and bronze construction to withstand the toughest use;
- Practically vandal-proof—always on the job—non-freezing in any weather;
- Fresh pure water instantly available—can't be contaminated by any underground source;
- Saves on waste water—foot operation cuts off water upon release instantly, surely!

Write for FREE CATALOG

The Murdock Mfg. & Sup. Co.
Cincinnati 2, Ohio

OUTDOOR DRINKING FOUNDTAINS

MURDOCK

HYDRANTS
STREET WASHERS

New Pipe Finder Features Greater Accuracy

An outstanding, new electronic instrument for locating and tracing buried pipes, conduits, and metal objects with greater accuracy and in less time is announced by FISHER RESEARCH LABORATORY, INC., PALO ALTO, CALIF. Called the "Electronic Witch" M-Scope pipe finder, it is designed with an entirely new electronic circuit, and features a new, unbreakable moulded fiberglas case.

The new circuit is not only more stable than conventional electronic circuits, it is also less sensitive to temperature changes, shock, and vibration. Battery consumption is lower than in ordinary pipe finders. According to the company, the "B" battery will last three times as long between battery changes, and the "A" battery will last twice as long.

Other commendable features of the new M-Scope include improved receiver selectivity and instrument operational

frequency, which combine to decrease the unit's sensitivity to all types of outside interference. Furthermore, the new circuit design employs readily replaceable parts, and the standard tubes and batteries are easy to replace in the field. A new, super sensitive leak detector circuit, included in every "Electronic Witch," is valuable for emergency leak detecting.

The red molded fiberglas housing the "Electronic Witch" is impervious to water, won't scratch, stain, splinter, or bend, and is virtually indestructable. It retains its new appearance—even after months of active field use.

Additional information on the "Electronic Witch" pipe finder is available on request. Write directly to the company , or use the Post Card on the colored page in this section. Circle No. 838.

Hyster Names New Advertising Agency

HYSTER CO. announces Cole & Weber, Portland, Ore., as new domestic-export advertising agency and marketing and public relations counselors for its tractor equipment and industrial truck divisions.

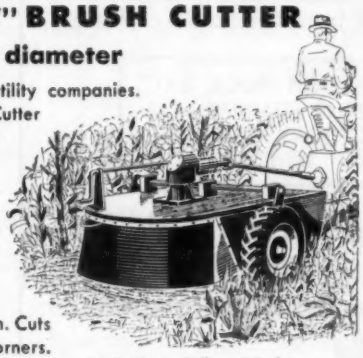
Located at 2902 N. E. CLACKAMAS ST., PORTLAND 8, ORE., Hyster operates four factories located in Portland; Peoria and Danville, Ill., and Nijmegen, The Netherlands. The firm is represented throughout the world by over 700 dealers.

SAVE TIME AND MONEY ON YOUR CLEARING JOBS!

Servis UTILITY "Gyro-57" BRUSH CUTTER

cuts brush up to 3" in diameter

For cities, highway departments and utility companies. the Servis UTILITY "Gyro-57" Brush Cutter performs clearing work efficiently and economically. Available in Pull Type (illustrated) or 3-pt. Lift Type models, it is equipped with patented multiple stationary and fly-wheel action rotating blades that make a complete 57" wide cut every 2" of travel at 4 mph. Special protective rear skirt makes for safe operation in town. Cuts along pavement edges and in close corners. Very low maintenance cost.



Available in 84" model also.

☐ 3 Pt. Life Type (57") ☐ Pull Type (57")
☐ Pull Type (84")

Servis EQUIPMENT CO. DALLAS, TEXAS

Servis Equipment Company
1000 Singleton Blvd.
Dallas, Texas

Please send me information on_____
Name_____
Address_____
City_____ State_____
Type Tractor Owned_____

NEW ALL-AMERICAN **PICNIC GRILL**

It's *tops* in grills! Positive six-way draft control provides faster, easier fire kindling, saves fuel, guarantees tenderer, juicier charcoaled steaks, chops and barbecues. American's many plus-features assure perfect *lifetime* performance. Shipped fully assembled.

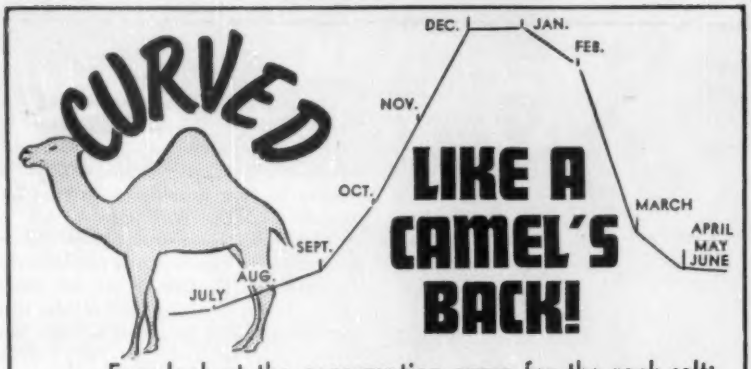
STATIONARY Weight 160 lbs. COMPLETE $35.75

PORTABLE Weight 185 lbs. COMPLETE $43.75

PATENTS PENDING

Order Your All-American Grill TODAY!

AMERICAN PLAYGROUND DEVICE CO. ANDERSON, INDIANA



Ever look at the consumption curve for the rock salt you buy for ice and snow control? From almost nothing in the summer it jumps up to a peak in the months of heavy snow and ice.

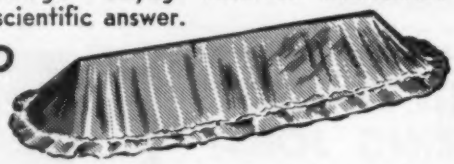
Ever look at the production curve on rock salt mined for you to use for highway ice and snow control? Just about even all year long.

Every year unprepared buyers run short of Cayuga Rock Salt. Roads are unprotected, taxpayers inconvenienced, angry, and even injured.

How can you be sure of having enough Cayuga Rock Salt to control ice and snow on your roads and streets next winter? It's easy. Place your order for Cayuga Rock Salt now.

How about storage? Cayuga Rock Salt distributors offer the modern scientific answer.

RAYN SHED



RAYN-SHED is a tough-skinned, watertight, weather-resistant vinyl plastic sheet. Standard-size strips, sewed together, will cover salt piles of from two to 20 carloads.

WE GUARANTEE THAT CAYUGA ROCK SALT PROPERLY STORED THIS SUMMER WILL BE USABLE FOR HIGHWAY PURPOSES ALL THIS COMING WINTER

"Let's Store More Early In '54"

ORDER CAYUGA ROCK SALT TODAY
18 NEARBY DISTRIBUTORS

CAYUGA ROCK SALT CO., INC.

MYERS, NEW YORK

SALT IN SIZES FOR ALL PURPOSES
BULK OR BAGS

Purchasing

Installing New Street Signs No Problem in Baltimore

Henry A. Barnes, Baltimore's Director of Traffic, looks on as the first of some 40,000 new street signs is installed in Baltimore, Md.

Baltimore, Md., which is currently in the midst of a giant traffic improvement program, is installing about 40,000 new street signs, according to Henry A. Barnes, the city's Director of Traffic. These signs are secured quickly and permanently with a Ramset powder-actuated tool. The powerful Ramset secures the sign by driving the steel fastener directly into the steel post.

Other traffic improvements now underway in Baltimore, include the re-engineering of traffic lanes through all sections of the heart of the city. Mr. Barnes, former Traffic Director for the City of Denver, is the originator of the "Barnes' Dance" method of controlling pedestrian traffic.

Full information on the new, powder-actuated tool used to secure Baltimore's street signs is obtainable from RAMSET FASTENERS, INC., 12.17 BEREA RD., CLEVELAND 11, OHIO. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 822.

Off-Street Parking Problem Answered

The city that employs attendants to operate off-street parking facilities, increases overhead, automatically lowering its revenues. A more economical way to handle this problem is to install coin-operated parking-lot gates, which may be leased or purchased from EM-RO DISTRIBUTORS, 120 S. LASALLE ST., CHICAGO 3, ILL.

The Em-Ro gate looks like a railroad-crossing gate. Two gates are used at

each parking lot; one at the entrance and another at the exit. To enter, the motorist deposits a coin in a coin box which is easy to reach from the car window, and the gate opens. When the rear wheels of the vehicle clear the treadle, the gate is automatically closed. This same procedure is followed when leaving the parking lot.

For additional details on Em-Ro coin-operated gates, and how they help increase revenues, address the company directly, or you may use the Post Card on the colored page in this section. Circle No. 856.

Fast Adding with a New 10-Key Model

Instead of a repeat key, a new quiet model Underwood Sundstrand adding machine has a multiply bar located at the right of the numeral row of keys. Long enough to be used with either the motor bar or subtract key, this multiply bar is held down with the motor bar for direct multiplication. Short-cut multiplication is performed by holding down the multiply bar and subtract key.

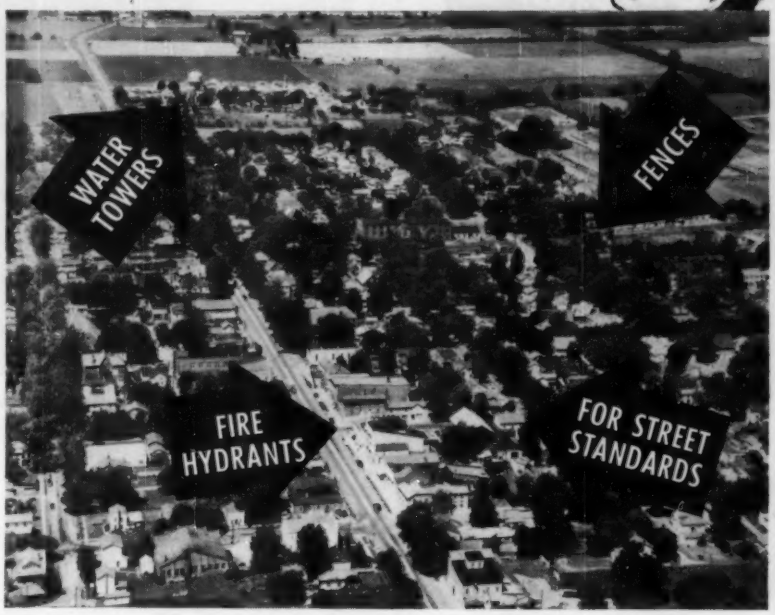
Four motorized improvements perform adding, subtracting, nonadding, sub-totaling, totaling, simplified multiplication, and printing credit balances.

Credit subtotals are identified by a red "CR" symbol. Use of a table of decimal equivalents supplied by the manufacturer also permits swift division by multiplication.

Among the many applications of the new Underwood Sundstrand adding machine are computing interest, extending orders, payrolls, and percentage of increase or decrease.

For complete information on this new portable, electric model, and also on a new line of manual adding machines, write Underwood Corp., One Park Ave., New York 16, N. Y., or use the Post Card on the colored page in this section. Circle No. 844.

LONG LIFE · · · GOOD LOOKS



Subox & Subalox PAINTS

DEPENDABLY PREVENT RUST AND CORROSION

A SINGLE COAT of either Subox or Subalox, containing a rust-inhibitive pigment of lead-suboxide, is sufficient for easy and economical maintenance. The attractive appearance of these paints creates good public relations while their long life helps keep taxes to a level much appreciated by the local property owner.

WIRE MESH FENCES, once such a tedious paint job, also can be given this "new look" with a single coat of paint easily applied by floor brooms.

Not only does the SUBOX SYSTEM take care of these problems but it also solves many of the more complex maintenance problems encountered in water works or sewage engineering. Our technical staff will be glad to advise you on efficient rust protection for metal surfaces.

Subox Inc.

10 Fairmount Plant, Hackensack, N. J.

SOIL COMPACTION
For Better, Quicker STREET REPAIRS

Use BARCO RAMMERS

HERE is a BETTER, QUICKER, CHEAPER way to repair streets when holes or trenches are dug in paved areas. Instead of (1) mounding up the backfill and waiting for it to settle, or (2) using expensive granular replacement fill, do as others are now doing — Use Barco Rammers to get HIGH DEGREE COMPACTION of original backfill *immediately*. No waiting to restore paving! No dangerous bumps or holes left in streets! No expensive "call backs" to work on holes! SAVE WITH BARCO!

ASK FOR DEMONSTRATION

The Barco Rammer is a new tool with many uses! Tamps backfill to 95% compaction at amazingly low cost — Let us show you actual figures. Ask for our nearest distributor to give you a demonstration.

• Send for CATALOG No. 621

BARCO MANUFACTURING COMPANY
535F Hough St.
Barrington, Ill.
(A Chicago Suburb)
Builders of Portable Gasoline HAMMERS and RAMMERS

Purchasing News

Chicago Stresses Improved Refuse Collection

Chicago's Bureau of Sanitation has added 50 of these combination International R-212 trucks and Gar Wood Load-Packer bodies to its refuse collection fleet.

An equipment modernization program recently established by Commissioner Lloyd M. Johnson of the Chicago Department of Streets and Sanitation, resulted in the addition of 50 new units o the city's refuse collection fleet. These units combine short-wheelbase, cab-over-engine design R-212 trucks made by the International Harvester Co., with special Load-Packer bodies from Gar Wood Industries, Inc. They are replacing 50 older vehicles in a fleet totaling some 375 trucks.

According to Commissioner Johnson, the International R-212 truck with its 150-inch wheelbase, has a maneuver-

SAVE up to 85% brush handling costs

This new M & M Brush Grinder rapidly converts 7 truckloads of brush into one truckload of chips.

Save on labor costs . . . truck operating costs. One man feeds brush or branches up to 6" in diameter into the Brush Grinder where they are chewed into small uniform wood chips and automatically blown into a truck or spread on the ground. The new M & M Brush Grinder is a portable unit with its own power plant. It hitches to jeep, car or truck for transportation right to the job. Safe easy operation with all moving parts fully enclosed. Nearly 100 years of experience in building fine grinding equipment is your assurance of long dependable service from an M & M Brush Grinder.

81

WRITE FOR ILLUSTRATED FOLDER TODAY

1854 100 YEARS 1954

MITTS & MERRILL 1003 S. WATER ST., SAGINAW, MICHIGAN

ability "which is distinctly advantageous to refuse collection, particularly in congested areas." This short wheelbase facilitates turns in T-alleys; a difficult feat for the older trucks in the fleet, which have wheelbases of 175 inches or more.

The new trucks are powered by International Super Red Diamond 450 engines, with vertical stacks, disposing of exhaust high above the heads of pedestrians. They are equipped with an overdrive transmission, a double reduction rear axle, 31-gallon gasoline tank, full air brakes, and increased cooling capacity.

The closed Load-Packer body features low-level loading, automatic unloading, and greater compaction, enabling Chicago, like other major cities, to improve its waste collection from a sanitation as well as dollars-and-cents point.

Complete information on the new short-wheelbase truck is available from INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL., or circle No. 852 on the Post Card in this section. For Load-Packer data, address GAR WOOD INDUSTRIES, INC., WAYNE, MICH., or circle No. 853 on the Post Card.

Portable Drilling Machine Powers Itself

Pionjar, a new, self-contained rock-drilling machine and breaker, drills holes for street repair, pipe and cable trenches, and foundation operations without benefit of an air compressor. It weighs only 86 pounds; features a built-in, air-cooled single-cylinder, 2-stroke engine, and can be converted from a rotating drill to a breaker in minutes.

Designed by LARSON & CO., 13733 VENTURA BLVD., SHERMAN OAKS, CALIF., Pionjar is equipped with a floatless carburetor for angle and horizontal drilling. The unit is said to drill about 16 inches a minute in medium-hard granite with a bit diameter of 1.06 inches. With a bit diameter of 1.34 inches, it can drill about 10 inches a minute. The machine drills to a depth of 13 feet, cleaning the hole at the same time by using hollow drills with tungsten carbide chisel bits.

A complete description of the Pionjar and how it operates, is available from Larson & Co., or use the Post Card in this section. Circle No. 829.

Traverse City Iron Works

Traverse City, Michigan

Manufacturers

Fire Hydrants and Valves

A.W.W.A. Specifications for Municipal and Industrial Work
Factory Mutual and Underwriters Approved for Automatic Sprinkler Installations.

- Mechanical Joint Fittings
- Bell and Spigot Fittings
- Flanged Fittings
- Special Fittings
- Fabricated Pipe for Pumping Station and Sewage Treatment Plants

A "LIFESAVER" for Your Community!

Equip your school crossings, street repair sites and other danger zones with PATROLITES—the portable railroad-type wig wag signal that saves lives. No driver can ignore them. Two 7" AMBER or RED lights "blink" alternately . . . seen for three blocks. Quickly wheeled away after use. Battery charger unit included. Suggested wording:

FACTORY ENTRANCE	ROAD REPAIR
STREET REPAIR	STREET CLOSED
DRIVE-IN THEATRE	DANGER

Other wording on request.
SEND FOR BULLETIN 54.

The PATROLITE CO.
BOX 266 WARSAW, INDIANA

An Ideal WILD "WORKING TEAM"
for Any Angle from Every Angle...

on
HIGHWAY • RAILWAY • TUNNEL
BRIDGE • SKYSCRAPER • DAM
or any other job... big or small

WILD HEERBRUGG

N-II PRECISE LEVEL

Light-weight, sturdy Tilting Level for universal application.

WILD HEERBRUGG

T-I OPTICAL *Repeating* TRANSIT

Rugged, compact design . . . with 20 years of proven service under tough field conditions.

Engineers on important developments throughout the world depend on these inherently accurate WILD surveying instruments . . . Swiss precision designed for stability under adverse conditions, for sturdiness and for ease in operation . . . they provide lasting trouble-free service.

For details phone or write for Bklt AC-5

Full Factory Service by Specialists

HENRY WILD
SURVEYING INSTRUMENTS SUPPLY CO.
OF AMERICA, INC.
MAIN & COVERT STS., PORT WASHINGTON, N. Y.
PORt Washington 7-4843

Higher Pressure and LESS MAINTENANCE

ROSCO
MINNEAPOLIS

STREET FLUSHER
MODEL MTA

THE ROSCO DESIGN assures a maximum delivery ratio between horsepower and pump capacity. That's because the flusher is equipped with an enclosed impeller, self-lubricated, centrifugal pump—hydraulically balanced and mounted integrally with the power unit. End thrust to the engine crankshaft is completely eliminated. It's this design that provides maximum pressure at the flushing shoes. An important money-saving feature is that the self-lubricated pump *eliminates the need for constant daily maintenance.*

OTHER MODELS include a 2-wheel flusher . . . Model MFR for truck mounting . . . Model MBC for towing behind a truck.

YOUR ROSCO DEALER will show you how Rosco equipment can help safeguard your community's health in the most efficient way. Standard models in 1200, 1600, or 2100 gallon capacities. *Send for bulletin 54-2.*

MODEL MTA WITH CANOPY TOP

ROSCO MANUFACTURING CO.
3118 SNELLING AVE. • MINNEAPOLIS 6, MINN.

Purchasing News

Improved Street Maintenance

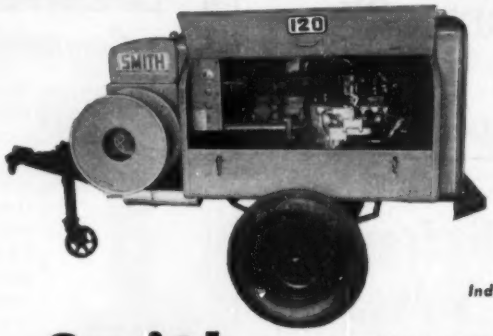
A 140-hp Cummins engine powers this Adams motor grader.

A new 28,000-pound motor grader designed to handle your city's street construction and maintenance jobs quickly and effectively, is announced by the J. D. ADAMS MFG. CO., INDIANAPOLIS, IND. Called the Adams No. 660, it may be used for surface mixing and grading, scarifying, banksloping, and efficient snow removal.

An interesting feature of the new unit is its wide range of blade adjustments. The blade may be adjusted from a deep ditching position to a high bank cutting position in seconds. It is easily rotated under a scarifier block for reverse ditching or spreading cuts; adjusted to cut any width flat-bottom ditch; or moved outward for casting over embankments.

Controls of the Adams No. 660 are simple to operate, and are located within easy reach of the operator. The blade angle may be changed while the grader is in action, and the high-arch front axle affords ample clearance for straddling big windrows of oil and stabilization mix.

A new catalog describing the new



Model 120-P

Powered by CHRYSLER Industrial Engine

Smith 120-P air compressor

Operates all these tools—for less!

- ✓ Two 80-lb. paving breakers.
- ✓ Two 80-lb. sheeting drivers.
- ✓ One 50-lb. rock drill.
- ✓ Four backfill tampers, or two concrete vibrators.

Write for complete facts and names of nearest dealer!

CUTTING COSTS FOR CONTRACTORS— Maine to California!

The Smith 120-P gives operating economy that big compressors can't approach. Goes where big, bulky compressors can't go. Powered by heavy-duty Chrysler Model 22 Industrial Engine. Simple, compact design—minimum fittings, gaskets, etc. to break down or cause trouble. No couplings, no clutch. Finned aftercooler reduces air temperature approx. 200°, gives longer hose life!

Also the Smith 70-P Compressor

GORDON SMITH & CO., Inc.

425 College Street
Bowling Green, Kentucky

motor grader, plus a wide variety of optional equipment, is available from the J. D. Adams Mfg. Co. For your copy, write the company directly, or use the Post Card on the colored page in this section. Circle No. 863.

Repairs Worn Stairways

Make certain that the stairways in schools, hospitals and other public buildings are 100% safe by preserving all new stairway treads, and repairing worn treads before they become hazardous.

An easy, economical way to make these repairs is to use the "Stairmaster," a new metal safety tread introduced by WOOSTER PRODUCTS INC., WOOSTER, OHIO

Easily applied on all types of stairs, the tread is made with permanent extruded lightweight aluminum alloy base in a standard 9-inch depth, in lengths to meet your requirements. It is designed with 11 rows of firmly embedded safety ribs containing hard abrasive grains for anti-slip protection.

To install the "Stairmaster" over worn stair treads, you simply level the existing tread with mastic. Screws or a combination screw and lead shield are furnished to fasten it securely to the stairs.

The new tread has a 1⅛-inch lip which covers and protects the face of the worn tread, at the same time, improving the appearance of the stairway.

A complete description of the "Stairmaster," how to apply it, and what lengths to ask for, is available in literature from Wooster Products Inc. Write directly, or take advantage of the Post Card on the colored page in this section. Circle No 817.

Looking for help to control the SPRING TRAFFIC DELUGE?

LOOK TO LYLE

FOR IMMEDIATE DELIVERY ON ANY OF 140 POPULAR TYPES OF TRAFFIC SIGNS

● The swelling flood of traffic would be impossible to control without every available traffic sign properly located and observed. Make sure your traffic sign requirements are met. Send for Lyle's detailed list of traffic signs and signals; you can get immediate delivery on any of 140 of the most popular types in use. Lyle signs conform to all federal and state specifications.

For 40 years, supplying the nation's sign needs

LYLE SIGNS, INC.

2720 University Ave. S.E.
MINNEAPOLIS 14, MINNESOTA

THIS IS THE 2-WAY Bendix "MULTI-MASTER"

The Mobile Radio With A Thousand Uses!

*Reg. U. S. Pat. Off.

- The Bendix "Multi-Master" can be used as a fixed station.
- It can be used as a mobile unit.
- Easily adapted to narrow band operation.
- It works on either AC or DC current.
- It is available from 2½ to 60 watt output.
- Pull up . . . pull out . . . or pivot for easier servicing.
- It can be transported from one location to another.
- It can be transferred from one vehicle to another.

The Bendix* Multi-Master incorporates all the new and outstanding features of Bendix 2-way radio. It has range and power. Static free reception. Longer life components. Low power drain.

Bendix offers a complete line of accessories from hand sets to speakers, antenna to shock mounts . . . plus all technical help in obtaining license and complete system engineering.

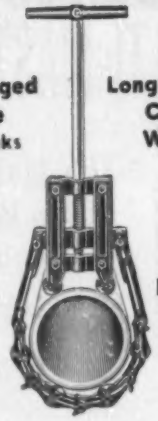
It costs no more to own the best . . . so look at Bendix Radio before you buy. For complete details and specifications, write today to the address below.

Bendix Radio

DIVISION OF BENDIX AVIATION CORPORATION
BALTIMORE 4, MARYLAND

Export Sales: Bendix International Division, 205 E. 42nd St., New York 17, N. Y., U. S. A.
West Coast Sales: 10500 Magnolia Blvd. North Hollywood, California
Canadian Distributor: Aviation Electric, Ltd., 200 Laurentian Blvd., Montreal, Quebec

HEAVY-DUTY
ELLIS PIPE CUTTER
FOR CUTTING LARGE SIZE PIPE



Drop-Forged Frame and Links

Long-Lasting Cutter Wheels

Makes a Hit With Water Works Men

Cuts Pipe In or Out of Ditch

TWO SIZES

No. 01 for 4" to 8" Pipe

No. 1 for 4" to 12" Pipe

Write for Circular and Price List No. 35AC

ELLIS & FORD MFG. CO.
FERNDALE 20, MICH.

Purchasing News

New Backhoe Attachment for Crawler Tractors

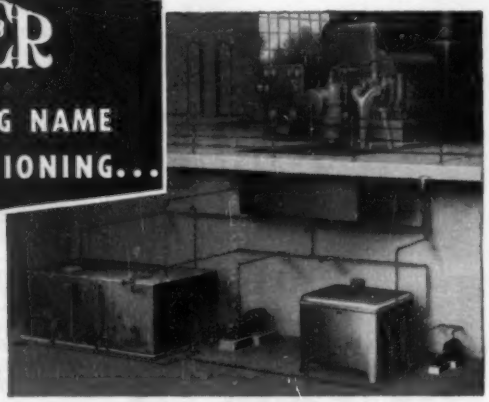
Evan E. Dorkins, chief development engineer for Ottawa Steel Products, Inc., demonstrates the dual One-Trol on the new model EX-5G heavy-duty backhoe.

Attach this new, heavy-duty backhoe to any Allis-Chalmers HD-5G, International-Harvester model TD-6 or TD-9, or Caterpillar D-4 crawler tractor, advises OTTAWA STEEL PRODUCTS, INC., OTTAWA, KANS.

The Ottawa backhoe has an extended reach of some 15 feet, and will dig to depths of over 9 feet. It is equipped with seven hydraulic cylinders and dual One-Trols, and features a reverse positioned cylinder inside the main boom. This cylinder provides the backhoe with about 40% more power than

BOWSER

THE OUTSTANDING NAME IN OIL CONDITIONING...



...for power generating equipment!

This Bowser turbine oil conditioning system keeps oil "bone dry" and crystal-clear . . . the best "stay-on-the-job" insurance a turbine bearing can have. Costly bearing failures are avoided and less stand-by equipment is required with Bowser oil conditioners. Turbine oil lasts for years, too! That's why Bowser oil conditioners are on the job in a majority of power plants.

May we send you complete data

BOWSER

BOWSER, INC., 1342 CREIGHTON AVENUE, FORT WAYNE 2, IND.

Regional Offices: • Atlanta • Cleveland • Dallas • Fort Wayne • Kansas City • New York • San Francisco • Washington, D. C. • Canadian Plant and Sales, Hamilton, Ont.

RODDING-CLEANING MACHINES

method of Sewer Pipe Cleaning and Water Main Cleaning

Saves

Time, Money, Labor and Maintenance . . .

and cleans pipe 2" to 48"

Rodding-Cleaning Machines also adapted for pulling power lines through conduits. ALSO for telephone duct rodding.

WRITE TODAY for further information

Rodding-Cleaning Machines, Inc.
7827 Melrose Avenue
Los Angeles 46, Calif.

a conventionally positioned boom cylinder.

Get complete information on the new backhoe attachment for crawler tractors by writing directly to Ottawa Steel Products, Inc., or take advantage of the Post Card on the colored page in this section. Circle No. 847

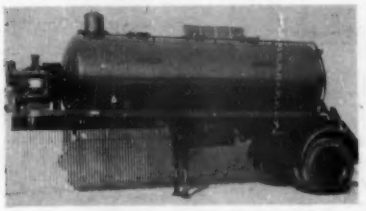
New Tampers Use Less Air

The W-18, a new backfill tamper, and WT-18, a new triplex tamper, both designed for efficient, low-cost trenching in municipal construction work, are announced by the Worthington Corp., Harrison, N. J. These units will deliver more and heavier blows using less air, and require minimum maintenance.

In addition to fast, safe operation with uniform coverage, the new tampers stress smooth exteriors free from nuts, bolts, and other projections that are likely to interfere with the operator. A positive-acting disc valve provides consistent action, while a positive lock on the gland nut keeps the front end tight and the packing adjusted as set. Also featured is a built-in lubricator with a large-capacity oil supply.

Both the W-18 backfill tamper, and the WT-18 triplex tamper are described in *Bulletin* 1224-B1. For a free copy, write the Advertising and Sales Promotion Dept., Worthington Corp., Harrison, N. J., or you may use the Post Card on the colored page in this section. Circle No. 816.

Clean Catch Basins In Sewers



Vacuum tank will load, carry and discharge liquids or semi-solid matter.

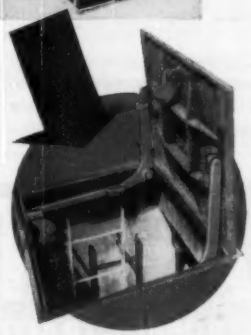
The Thompson Tank and Mfg. Co. has added a new trailer-mounted unit to its line of unitized vacuum tanks, increasing the tank's usefulness in cleaning catch-basins, carrying water, handling sewer breakdowns, and unplugging drain lines. This latest model, complete with tank, engine, pump, and 4-way valve, has a 55-barrel capacity, and may be quickly attached to any tractor.

Aside from its greater mobility, the new tank is similar to previous Thompson UVT's, and will load, carry, and discharge water, oil, mud, and chemicals. It features fast suction and discharge to speed the emptying of well cellars, pits, and sumps. Repairs in pipelining are faster too, with the vacuum used to bellhole, while strong reverse pressure rapidly puddles trenches. Spills and leaks can be sucked into the tank for later disposal.

Further data on the trailer-mounted unitized vacuum tank is available from the Thompson Tank and Mfg. Co., 2019 E. Wardlow Rd., Long Beach 6, Calif. Write directly, or you may use the Post Card on the colored page in this section. Circle No. 820.

WACHS Safety Vault Covers

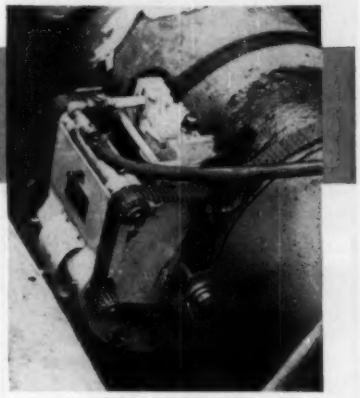
for Valve, Meter, Transformer and District Governor Vaults



Features

- One man can quickly raise cover with ease and without danger.
- Cover can not drop into vault or slam to cause injury or damage.
- Cover can be opened from the inside of the vault by one man—an added safety feature.
- Positive tamper proof lock that cannot be opened unless key is used.
- Open cover stands in upright position indicating that manhole is open.
- Unobstructed 30" square opening gives ample room for installation and servicing heavy equipment.
- Heavy duty for heavy traffic—cast iron frame and ribbed steel cover both machined for accurate fit to eliminate rattle.
- Moisture resistant, heavy cast steel levers and linkage with stainless steel pins in "Oilite" permanent oiled bronze bushings for long trouble-free service.
- Complete counterbalance structure protrudes less than 6" from the wall.

WACHS NATIONAL PIPE SAWS



16" clearance between 24" mains

Make Fast and Accurate Cuts on 10" to 48" Cast Iron and Steel Mains

Features

- Minimum Pipe Line down time.
- Cuts under water in flooded ditches.
- No broken pipe, milled cut.
- Thor Air-Powered, no flames near pipe.
- Set-up time about 15 minutes.
- Portable — weighs only 315 lbs. Two men can carry and set up unit.
- Small excavation—only 16" clearance needed.
- One machine cuts all pipe sizes from 10" to 48".
- Only two adjustments necessary for size changes.
- Cuts 24" pipe in 24 minutes — 36" pipe in 36 minutes, etc.

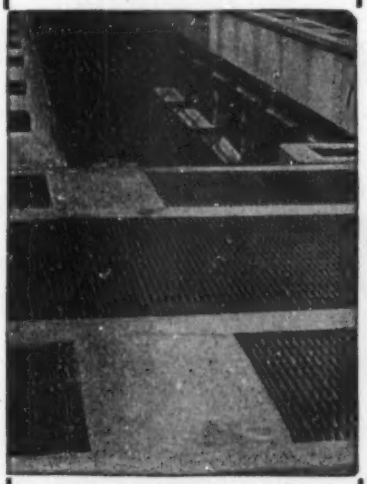
Write today for descriptive folder and engineering data on this new labor saving saw.

THE E. H. WACHS COMPANY

Manufacturers of Engines, Valves and Machinery since 1883

1525 NORTH DAYTON STREET · CHICAGO 22, ILLINOIS

WALK...
DRY!
SAFE!
CLEAN!
ON
IRVING
"DRYWAY"
GRATING
WALKWAYS and
STAIR TREADS



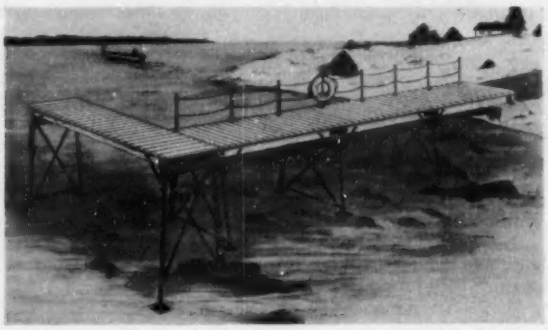
IRVING GRATING
Provides the perfect dry, clean, safe flooring for sewerage disposal plants. Gratings of aluminum, steel and other alloys offer a minimum of maintenance cost.
Catalog mailed on request.

IRVING SUBWAY GRATING CO., INC.
ESTABLISHED 1902

OFFICE and PLANTS at
5056 27th St., Long Island City 1, N. Y.
1856 10th St., Oakland 20, California

Purchasing News

Low-Cost Landing Pier



The appearance of public beaches may be improved without stretching your city's budget by installing an attractive steel landing pier that you can build yourself.

The Hussey Mfg. Co. Inc., will furnish the sections for a landing pier of any shape or length. These sections are 12 feet long and 4 to 6 feet wide. They are adjustable for varying water heights, and are simple to install and take out.

Hussey will also supply you with steel adjustable supporting horses, all the necessary metal parts, and a complete set of blueprints. Easy-to-follow instructions for building wooden deck sections are provided. The wood, however, may be purchased locally, effecting a considerable savings in freight and labor.

This same low-cost, steel landing pier, and other heavier-type models, are available complete and ready for installation. All are fully described in a new catalog together with information on diving boards, floats, float ladders and flag poles. For your copy, write the HUSSEY MFG. CO. INC., 546 RAILROAD AVE., NORTH BERWICK, MAINE, or use the Post Card on the colored page in this section. Circle No. 832.

SAFE-T-CONE
ALL-RUBBER TRAFFIC GUIDES ®

Patent Pending

for EFFICIENT TRAFFIC CONTROL

During emergency street repair or the traffic rush hour . . . Safe-T-Cones are constantly on duty . . . guiding traffic safely thru congested areas. Used by traffic engineers from coast to coast, Safe-T-Cones are the answer to modern traffic problems. Available in two sizes, 18 inch and 28 inch, painted or reflectorized.

Write for complete information.

RADIATOR SPECIALTY CO.
CHARLOTTE, NORTH CAROLINA
IN CANADA: RADIATOR SPECIALTY CO., LTD., TORONTO

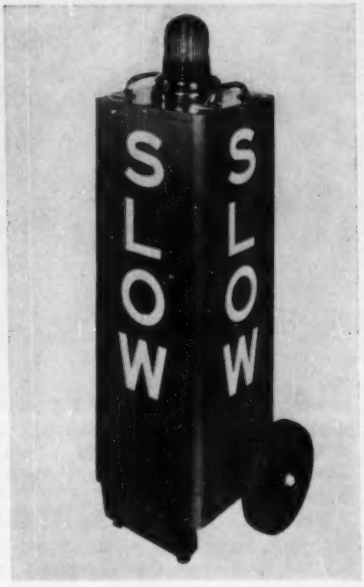
2011

New Warning Signal Is Easy to Transport

Move this new, portable warning signal quickly and easily from one street-repair job to another. Use it at school crossings, in municipal plants, and wherever emergency repairs are under way.

Mounted on heavy, 8-inch rubber-tired wheels, the standard signal consists of a flashing amber light that is quickly seen from any angle. This light, powered by a storage battery which is automatically recharged with a built-in charger, will operate continuously for about 30 hours. The signal is made of heavy-gauge steel with a baked-enamel finish, and features the word SLOW in large letters on all four sides.

A full description of the new, portable warning signal is contained in *Bulletin* 56, available from the GENERAL SCIENTIFIC EQUIPMENT CO., 2700 W. HUNTINGDON ST., PHILADELPHIA 32, PA. Write directly, or take advantage of the Post Card on the colored page in this section. Circle No. 834.



The word SLOW appears on all four sides of this new warning signal.

HARDIE

FOR *AERO-MIST*

SHADE TREE PROTECTION and MOSQUITO CONTROL

No drip—no run-off—spray when and where you want to with Hardie Aero-Mist. Records show more than 50% saving in labor and material cost by Aero-Mist concentrate spraying. Big volume, high velocity air stream carries the spray to the tops of the tallest trees. Official tests show mosquito killing horizontal coverage up to 1,000 feet.

TWO SIZES

Model L40—4,000 to 5,000 cu. ft. air per minute at 130 MPH. Model L80—8,000 to 10,000 cu. ft. air per minute at 150 MPH. Write for complete data.

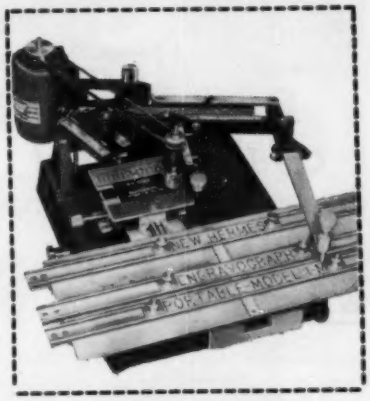
HARDIE
PEST CONTROL EQUIPMENT
• SOLD AND SERVICED

The Hardie Manufacturing Company,
Hudson, Michigan.
3825 Santa Fe Ave., Los Angeles 58, Calif.
1435 N.W. Northrup St. Portland 9, Ore.
Please send catalog.

Name_____
Address_____
City_____ State_____
I am especially interested in_____

engrave your own signs

MARKERS
NAMEPLATES
right on the premises



Portable machine, so simple to operate by anyone

- Make permanent attractive signs at less cost.
- Engraves on plastics, wood or metals.
- Tested and approved by City Departments.

For complete information write Dept. **87**

NEW HERMES
ENGRAVING MACHINE CORPORATION
13-19 University Place • New York 3, N.Y.

New

PARCOA*

Card-Key Control Operates Parking Lots

AUTOMATICALLY...

WITHOUT ATTENDANTS

Now you can solve parking problems in your community . . . relieve congestion and provide revenue—and do it automatically, without attendants.

The amazing new PARCOA system does the job safely, economically and dependably. The simple electrical mechanism controls entrance and exit gates, actuated by card-keys issued only to legal parking customers.

Low in first cost. Easy to install. Minimum maintenance. No attendants needed. Controlled capacity with 100% collection assured. Coded card-key can be changed as desired. System pays for itself quickly.

Write for illustrated brochure and name of nearest distributor.

*Your choice of controls (coin, card, token or any combination) makes this system readily adaptable to individual requirements.

PARCOA

PARKING CORPORATION OF AMERICA

Division of Johnson Fare Box Company
Specialists in revenue collection since 1909

33 No. La Salle Street, Chicago 2, Illinois

Sales and Service Offices in Principal Cities

Purchasing News

Folding Boom Offered with 4-Ton Truck Crane

New gooseneck-type boom is easily folded over a loaded trailer.

A hydraulically operated goosenecking boom is the newest addition to the model 80, a 4-ton truck crane made by the Pitman Mfg. Co. Available as an optional accessory, the new type boom reduces the cost of handling and hauling pipe, poles, and other materials. It is easily folded for travel by pushing a lever located at the operator's regular control station.

When the gooseneck boom is unfolded for work, reports the manufacturer, it has the same strength and capacity as the standard boom. The goosenecking operation is performed by a hydraulic cylinder installed in a V-shaped opening about 4½ feet from the base of the boom. Load stress in the boom is on the heavy steel bars and pin of the folding mechanism, sparing the hydraulic cylinder

Designed with a 4-ton capacity on a 25-foot boom, or 3 tons on a 37-foot boom, the Pitman crane is available with additional boom lengths up to 59 feet. In addition to the optional goosenecking feature, the standard 25- and 37-foot booms are hinged at the side, and can be folded for travel in minutes.

For full information on the model 80 truck crane, and the new goosenecking boom, write the PITMAN MFG. CO., 300 W. 79th TERRACE, KANSAS CITY 14, MO., or use the Post Card on the colored page which is found in this section. Circle No. 846.

BETTER HOSE CARE—WITH

CIRCUL-AIR

THE AIR CONDITIONING

FIRE HOSE DRYER

Circul-Air is the patented, electrically operated hose dryer which circulates prewarmed fresh air through coiled wet hose at the rate of 5 to 6 air changes per minute. It's designed to lengthen hose life, improve the appearance and functional design of new fire houses, and to save floor space and hard work. No other drying method is so fast—so economical—so easy to use.

Circul-Air Dryers have passed the Approvals Tests and are listed by the Underwriter's Laboratories, Inc., Chicago and the Canadian Standards Association.

Write for Catalog TODAY

THE CIRCUL-AIR CORPORATION

575 East Milwaukee Detroit 2, Michigan

AGENTS WANTED

to sell street and highway traffic signs, both plain and reflectorized, street name signs, posts and vehicle license plates—to states, counties, cities and towns.

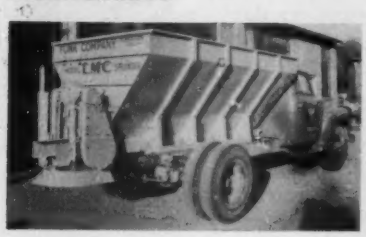
Write for details, stating experience, territory covered and credit references.

GRIMM STAMP AND BADGE CO.

8107 ROSALIE AVE.
ST. LOUIS 17, MO.

"Signs since 1876"

For Easier Street Construction and Maintenance



Optional equipment with the new Flink model LMC spreader includes catwalks, and a hopper screen.

Street departments interested in improved methods for constructing and maintaining city streets, are offered a new, hopper-type spreader and new broom drag, both available from the FLINK CO., DEPT. 4, STREATOR, ILL.

Powered from the power take-off or from a separate air-cooled engine, the model LMC spreader operates without worm or miter gears. The gear drive consists of two helically cut steel pinion gears, operating on a single helically cut ring gear. The conveyor is driven from both sides, with power equalized through a differential, and all drives are "straight-in-line."

The Flink aluminum broom drag is made in single 7½-foot sections or double 15-foot sections. Easy to load and unload, each section weighs about 60 pounds, depending on the size and type of brooms used. Single sections are available with 12 or 16 brooms.

A single, 7½-foot section and part of another single section are featured in this broom-drag illustration. Aluminum sections may be used separately, or combined into a complete unit.

For further information, write the manufacturer directly, or you may use the Post Card on the colored page in this section. Circle No. 855.

New hi-performance Jaeger pump

Pumps all the water a 2" hose can handle . . .

at easy, long-life engine speeds.

Weighs only 160 lbs. on base, 190 on pneumatics.

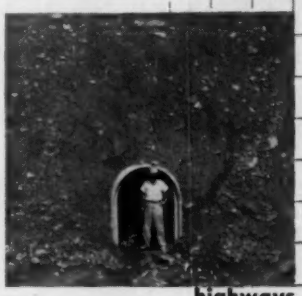
Delivering 10,000 gph when operating at only 2400 to 2550 rpm, this latest Model 2PN will actually pump all the water that can be pulled through a 2" suction line under average working conditions. In spite of this high capacity and pressure it is extremely light, compact and economical in price. *Ask your Jaeger distributor or write us.*

THE JAEGER MACHINE COMPANY 505 Dublin Avenue Columbus 16, Ohio

LOADERS • COMPRESSORS • MIXERS • PAVING MACHINES

flatten cost curves with UNIVERSAL Flat-base pipe

conduits



highways

industry

Pre-cast concrete pipe saves up to 30% over built-in-place methods. Easy installation. Up to 100 feet of UNIVERSAL Flat-base pipe can be laid and covered in one day!

Built for heavy duty, low maintenance. Flatten your cost curves . . . specify UNIVERSAL Flat-base concrete pipe. Write . . . we'll tell you more.

THE UNIVERSAL CONCRETE PIPE COMPANY
297 SOUTH HIGH STREET
COLUMBUS 15, OHIO
A subsidiary of the American-Marietta Co.

Cleveland Police Cars Feature Sturdy Battery

The Cleveland Police Department uses the recall system which permits our dispatcher to call the patrolman, by radio, back to his car. This enables each man assigned to a patrol car to "double-in-brass" as a foot patrolman in "hot spots," without losing radio contact. Because the officer must leave his radio on while he patrols on foot at frequent intervals for short periods of time, it is necessary to have a battery with adequate reserve.

Prior to our using the Vita-Plate battery, our average fleet battery life was about 2½ months; however since using it, the life has been extended to two years. Previously we had numerous "in service" failures which were costly, not only from the mechanical standpoint, but more particularly because it took two or more police officers off duty awaiting repairs. Our present battery had reduced "in service" failures to a small fraction of the previous level.

Ten minutes of motor operation each hour keeps the battery in condition for an hour's use of both receiver and transmitter. The recall equipment necessitates our car radio receivers run-

LET THE PUBLIC *keep your* **STREETS and PARKS CLEAN . .**

Use NORWICH Street and Park Baskets

83-C

CONSTRUCTION

8 Ga. Wire Mesh.
8 Vertical Braces with Interlocking Ring.
3½" Deep Sheet Metal Pan.
Angle Iron Ring.
Reinforcing Bottom.
Hot Dip Galvanized after Fabrication.

34" Deep.
22" Top.
18" Bottom.
Approx. wt. 43 lbs.
6" x 16" Blank Sign Plate

Write today for full details.

NORWICH WIRE WORKS, INC.
54 Broad Avenue
NORWICH, N. Y.

New Portable Dryer

makes the **Moto-Patcher**

A Highly Efficient Hot Mix Plant

The addition of this new portable dryer makes the H & B Moto-Patcher a highly efficient hot-mix plant for all types of patching, including building up weak shoulders, also for use on driveways, parking areas and other small paving jobs.

The dryer drum is 8 ft. long by 30" diameter, with a drying capacity up to 10 tons per hour. Aggregate may be fed by hand or directly from truck by means of a small chute attached to the tail gate. There is a towing hitch for readily attaching to any standard make truck.

New Spreader Attachment

This spreader attachment, which is optional equipment with the Moto-Patcher, is 8 ft. wide and is fully adjustable to specified grade and crown, insuring a uniformly smooth surface even on irregular pavement.

Bulletin MPD-53 gives complete information on the Moto-Patcher, Dryer and Spreader. See your local H & B distributor or write direct.

HETHERINGTON & BERNER INC.

America's First Builders of Asphalt Mixing Equipment

737 Kentucky Avenue — Indianapolis 7, Indiana

ning not merely four or five hours, but up to 22 hours per day. The Vita-Plate battery stands this service and has solved the special problem presented by Radar Units involving the current consumption of the radar, plus that of the transmitter and receiver.

THOMAS E. STORY, Superintendent
Bureau of Communications
Police Department
Cleveland, Ohio

The Vita Plate battery is manufactured by GENERAL COMMUNICATIONS, INC., 1420 E. 25 ST., CLEVELAND, OHIO. For a complete description, write the company directly, or you may use the Post Card on the colored page in this section. Circle No. 865.

What the Well-Dressed CD Worker Will Wear

Comfort is assured by the new helmet's adjustable suspension harness.

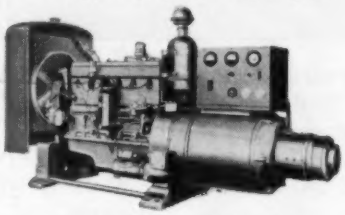
Civil Defense workers may soon be equipped with this newly designed helmet, according to Eastman Chemical Products, Inc. It is molded in one piece from lightweight Tenite butyrate plastic, a long-wearing material made to withstand maximum abuse.

The new plastic headpiece has a lustrous finish that won't chip or corrode, and features an adjustable suspension harness, riveted in. On the outside, Civil Defense insignia is applied with decalcomania or pressure-sensitive labels.

For full information on Tenite butyrate plastic, address EASTMAN CHEMICAL PRODUCTS, INC., AC4-54, KINGSPORT, TENN., or you may use the Post Card on the colored page in this section. Circle No. 839.

How Dubuque insures uninterrupted operation of its pumping station

Photo of Dubuque (Iowa) installation shows Onan Model 25HN, 25KW, 120/208-volt, 3-phase, 4-wire, 60-cycle.



New Onan 50KW Standby Plant

The Onan Model 50KA is designed for emergency use in pumping stations, sewage lift stations, civil defense or any installation with heavy load requirements. Write for specifications.

Continuous operation of Dubuque's Eagle Point water pumping station is assured during electric power interruptions by an Onan 25,000-watt, Model 25HN-4R Standby Plant. Five times since the Onan unit was installed in April, 1952, it has automatically cut in and furnished all the electric power for the following essential equipment: One ¼ h.p. electric motor for the station's oil burner, one ¼ h.p. electric motor for the condensate pump, four ⅝ h.p. and two ¼ h.p. motors for heating unit blowers, and thirty 200-watt lights for lighting the building.

The gasoline-driven standby plant also powers this additional equipment during extreme emergencies such as floods: Two 5 h.p., three 1 h.p. and six ½ h.p. electric motors for sump pumps and one 5 h.p. motor for priming the main pumping units.

Dubuque is one of the many communities and municipalities throughout the United States that is protected against power outages by Onan Standby Electric Pewer.

Write for Standby Folder and Engineering Assistance

Onan ELECTRIC PLANTS

D. W. ONAN & SONS INC.

8364 University Avenue S. E. • Minneapolis 14, Minnesota

WHY NOT LOAD THE CHEAPEST WAY?

BARBER-GREENE

MODEL

82-A

CRAWLER-MOUNTED BUCKET LOADER

FIGURE CONSIDER COMPARE AND SEE

your present loading cost . . .

wasted truck time . . . wasted man-hours . . . special operator . . .

the constant 3 cu. yd. per min. loading of the B-G 82-A . . .

the savings in man-hours and money possible on your loading jobs with a B-G 82-A Bucket Loader.

A B-G 82-A Bucket Loader is by all odds the cheapest and fastest method of loading free-flowing materials into trucks. Exhaustive cost analyses made throughout Barber-Greene's over 30 years' experience (during which B-G Loaders handled over a billion yards of material) have consistently proved this.

Simple controls mean that each driver can load his own truck . . . no need for an expensive operator. Each truck can be loaded to full capacity without spillage . . . without truck damage or undue truck wear.

Crawler-mounted, the 82-A provides positive traction in all kinds of going—on soft or muddy bases—on spots where pneumatic-tired rigs can't operate.

Barber-Greene BG

Aurora, Illinois, U. S. A.

About People

You know or should know

The **American Pool Co.**, of Briarcliff, N. Y., is planning an intensive advertising campaign on its swimming pool equipment, supplies and filters, and has appointed a new promotion and advertising manager to do the job, according to Jack Robineau, company president. He is David C. Simonson, former promotion manager of Colony Publications.

Members of **The Portland Cement Association,** Chicago, Ill., regret losing the services of Rodney D. Brewer, who retired recently as manager of the Association's Publications Bureau. According to Carl D. Frank, president of the Association, he will be succeeded by Jack L. Schneider, former assistant manager of the Bureau.

Philip D. Wagoner, chairman of the board of directors of **Underwood Corp.,** New York, N. Y., informs us that a former mayor of Millburn, N. J., Henry L. Junge, has been appointed new executive vice-president of the company. Mr. Junge joined Underwood in 1928 as assistant controller, and was appointed controller in 1948.

Henry L. Junge

Succeeding Mrs. Thomas W. Simmons as president of the **Johnston Pump Co.,** Pasadena, Calif., is Hugh Glen, past president of the **Emsco Derrick & Equipment Co.** Mrs. Simmons remains sole owner of the firm.

At the **Graver Water Conditioning Co.,** New York, N. Y., David M. Spillane has been appointed district manager of the company's Chicago office. Mr. Spillane, who began in Graver's Sales Estimating Department, last served the company as New York sales engineer.

When Roland J. La France takes over as manager of the Paint Sales Division of the **Joseph Dixon Crucible Co.,** he expects to devote a great deal of his time to expanding the company's distributor program, according to H. E. Ehlers, Dixon's industrial sales manager. Main offices of the Joseph Dixon Crucible Co. are located in Jersey City, N. J.

R. J. La France

Following the election of O. S. Leslie, vice-president in charge of manufacturing for **Fairbanks, Morse & Co.,** Chicago, Ill., to the firm's board of directors, the board announced the election of two new officers, J. A. Cuneo and Robert B. Craig. Mr. Cuneo, who has served Fairbanks-Morse as general sales manager, was promoted to vice-president in charge of sales, while Mr. Craig, former assistant to the company's president, was made a vice-president with headquarters in Washington, D. C. Another announcement from Fairbanks-Morse concerns the appointment of Glenn A. Parker to succeed W. W. Guernsey as manager of the company's Kansas City, Mo., Branch House. L. J. Maguire will head the company's newly created Electronics Division, with offices in Davenport, Iowa.

A new vice-president and general manager is announced for the **Fabric Fire Hose Co.,** Sandy Hook, Conn., a subsidiary of the **United States Rubber Co.** He is William Cole, recent sales manager for the firm.

From General Brehon Somervell, chairman of the board of directors and president of **Koppers Co., Inc.,** Pittsburgh, Pa., we learn of the appointment of Ralph Winslow as a new Koppers departmental vice-president. Mr. Winslow, manager of Koppers' public relations department for the past 7 years, has been responsible for the company's general, industrial and consumer advertising, sales promotion, press and public relations, and employee communications.

William F. Rockwell and D. F. Oltz have been appointed sales managers to head two new regional sales divisions recently set up by **The Lufkin Rule Co.,** of Saginaw, Mich., reports E. H. Meibeyer, vice-president of the company. Mr. Rockwell will manage Lufkin's new East Central Division, and Mr. Oltz, the firm's new West Central Division.

The **Ansul Chemical Co.,** Marinette, Wis., has a new advertising and sales promotion manager, Richard M. Baker; as well as a new publicity and publications manager, Brad Sebstad.

R. M. Buzard, sales manager of the Motor Truck Division of **International Harvester Co.,** Chicago, Ill., reports the appointment of Russell C. Burns as supervisor of the company's motor truck fleet sales. Mr. Burns, former general supervisor of Harvester used truck merchandising, has been associated with the firm for the past 20 years.

New Northeastern representative of the Diesel Department of the **Baldwin-Lima-Hamilton Corp.,** Hamilton Div., Hamilton, Ohio, is Robert P. Bolster, who will handle marine and stationery diesel engine sales in Canada, New England, and upper New York State. Mr. Bolster was for many years associated with **The National Supply Co.,** as regional and export manager for the firm's Diesel Division.

Robert P. Bolster

Leaving his long-time position with the **U. S. Geological Survey,** Washington, D. C., Jack B. Graham joins the staff of **Leggette & Brashears,** Consulting Ground-Water Geologists, of New York City. Well known in his field, Mr. Graham is secretary of the Section of Geology and Geography of the American Association for the Advancement of Science.

John H. Ford, new Southeastern sales representative for the **Ford Meter Box Co.,** Wabash, Ind., tells us that he'll make his headquarters in Greensboro, N. C. He is the nephew of John L. Ford, vice-president and secretary of the company.

George E. O'Brien will leave his position as purchasing and production manager for the **Rockwell Manufacturing Company's** National Meter Division to become factory manager of the company's new water meter plant at Uniontown, Pa., reports Courtney C. Shenkle, general manager of the Division. Mr. O'Brien began with Rockwell in 1934, and for the past 9 years has made his headquarters at the firm's Brooklyn plant.

George E. O'Brien

George L. Walker succeeds the former W. K. Sowdon Co. in managing Metropolitan New York sales for the **Simplex Valve & Meter Co.,** Philadelphia, Pa. Mr. Walker was recently appointed district manager of the valve and meter company's New York office.

Earle W. Williams, sales manager of the **Line Material Co.,** Milwaukee, Wis., reports the appointment of a new manager for L-M's Central Division. He is William E. Bracey, until recently an apparatus engineer at L-M's Southwest Division, a position that will be taken over by Floyd M. McKenna.

PROGRESSIVE COMMUNITIES SELECT

Koven

ALL STEEL
SWIMMING POOLS

THE POOL WITH THE LOWEST MAINTENANCE

The choice of budget-wise officials, KOVEN All Steel Swimming Pools are the pride of many leading communities. Recommended by architects for their sturdy good looks, they offer years of trouble-free economy... retain their beauty with only an occasional coat of paint. The only leak-proof type built, KOVEN All Steel Swimming Pools are of rugged welded steel construction and are not subject to the weaknesses found in other types of pools. Clean and modern in design, they are attractively shaped in a variety of forms and sizes which can be adapted to any existing arrangement. What's more, KOVEN with over 70 years' experience in steel fabricating, assumes all responsibility for construction details... from the selection of size to final installation. Call or write for a consultation—no obligation.

Send for our free, color-illustrated booklet.

PLANTS:

Jersey City, N.J.

Dover, N.J.

Trenton, N.J.

- *The only leak-proof type built*
- *Indoor and outdoor models*

KOVEN STEEL SWIMMING POOLS, INC.
A DIVISION OF L. O. KOVEN & BRO., INC.
154 OGDEN AVENUE, JERSEY CITY 7, N. J.

The American City Professional Service Directory

AIR POLLUTION CONTROL
AUSTIN C. DALEY
Air Pollution Engineer
City of Providence, R. I.
Consultant—Surveys and Solutions: Smoke, Dust and Fumes
Municipal Incinerator Design and Correction
29 Weybosset St. Providence 3, R. I.

ALBRIGHT & FRIEL, INC.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators & Power Plants, Industrial Building, City Planning, Laboratory, Reports, Valuations.
121 South Broad St. Philadelphia 7

ALLEN & HOSHALL
Consulting Engineers
Mechanical—Civil—Electrical
Municipal Improvements
65 McCall Place
MEMPHIS, TENNESSEE

ALVORD, BURDICK & HOWSON
ENGINEERS
Water Works — Sewage Disposal
Water Purification — Drainage
Flood Relief — Appraisals
Sewerage — Power Generation
20 North Wacker Drive, Chicago 6, Ill.

ABRAMS AERIAL SURVEY CORPORATION, Lansing, Michigan
One-quarter Century of Experience
Planimetric and topographic maps, controlled mosaics, and large-scale atlas sheets. . .
The complete job—photography—compilation—to finished survey.
Oblique photographs for pictorial views—for project presentation.
AERIAL SURVEYS — OBLIQUE PHOTOGRAPHY

The American Public Utilities Bureau
Organized to assist municipalities and public groups in utility valuations, rates, franchises, accounting and surveys.
John Bauer, Ph.D., Director
280 Broadway, New York City 7

The AMERICAN APPRAISAL Company
Milwaukee 2, Wis. • New York • Chicago • and other Principal Cities
Appraisals of Municipal Properties: Schools, Utilities, Hospitals, City and County Administrative Buildings For Insurance and Accounting Purposes

E. T. ARCHER & COMPANY
E. T. Archer — E. E. Hagen
Consulting Engineers
Organized 1907
Reports — Designs — Supervision — Water Works — Sewer Disposal — Power Systems
Railway Exchange Bldg.
Kansas City 6, Mo.

Topographic Maps
Air Photography
Tax Maps
Photographic Mosaics
Surveys

Jack Ammann
PHOTOGRAMMETRIC ENGINEERS
BROADWAY AT TENTH · SAN ANTONIO 5, TEXAS
AIR SURVEYS—MAPS
EASTERN OFFICE—P. O. BOX 411, MANHASSET, N. Y.

FOR
Cities
Counties
States
Consulting Engrs., etc.

JOHN J. BAFFA
Consulting Engineers
Drainage, Sewerage, Sewage and Waste Treatment
Water Supply and Water Purification
Investigations — Sanitary Planning
Reports — Plans and Specifications
75 West St. New York 6, N. Y.

B & B ENGINEERING CORPORATION
Fire Alarm and Traffic Signal — Engineers and Consultants
P. O. Box 31 — Norwood, La.
Branches: New York, N. Y.—Baton Rouge, La.—St. Louis, Mo.

SCOTT BAGBY
Modern Comprehensive City and Area Planning and Development
"Plans Which Can be Carried Out"
42 Church St., Montclair, N. J.
1500 Margaret S.E., Grand Rapids, Mich.

BIGELOW, KENT, WILLARD & COMPANY
Public Administration Consultants
Surveys of Federal, State and Municipal Governments
Organization Surveys — Accounting—Auditing—Budgeting — Wage & Salary Compensation Plans
New York — Boston

MICHAEL BAKER, JR., INC.
The Baker Engineers
Civil Engineers — Planners — Surveyors — Municipal Engineers — Airport Design — Sewage Disposal Systems — Water Work Designs and Operations — Consulting Services—Surveys and Maps
Branch Office—Jackson Miss.
Home Office—Rochester, Pa.

BLACK & VEATCH
Consulting Engineers
Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations, and Reports.
4706 Broadway — Kansas City 2, Missouri

S. R. DE BOER & CO.
INDUSTRIAL TOWNS, TRADE TERRITORY PLANNING
City and County Zoning, Street Plans, Economic Plans, Park and Recreation Plans, Civic Beautifying, Urban Redevelopment, Subdivisions, Shopping Centers
CONSULTATIONS and LECTURES
515 E. Iliff Ave., Denver 10, Colorado

HENRY N. BOUCHER ASSOCIATES
CONSULTING ENGINEERS
TOWN PLANNERS — LANDSCAPE ARCHITECTS
ORGANIZATION & DESIGN OF LAND AREAS & COMPONENTS FOR DEVELOPMENT
AIRPORTS, HIGHWAYS, GRADE SEPARATIONS — MASTER PLANS, SHOPPING CENTERS, HOUSING REDEVELOPMENT — GOLF COURSES, PARKS, POOLS, PLAYGROUNDS
4801 CONNECTICUT AVE. — WASHINGTON 8, D. C.

BARKER & WHEELER
36 State Street — Albany, N. Y.
11 Park Place — New York City 7
Sewage Disposal — Public Utility and
Water Supply — Industrial Valuations and Rates
Sewerage — Power

BROWN & BLAUVELT
Consulting Engineers
Expressways, Parkways, Highways—Bridges, Dams, Airports
Industrial Plants, Site Planning—Preliminary Reports
Supervision of Construction — Material Controls, Soils and Concrete Testing
Municipal Engineering Services — Tax Maps, Surveying
468 Fourth Ave., New York 16, N. Y. — 140 Eighth St., Pittsburgh, Pa.

W. I. BARROWS & ASSOCIATES
Consulting Engineers
Mechanical—Civil—Electrical—Hydraulic
Industrial & Municipal Betterment & Improvements
1169 Reibold Bldg., Dayton 2, O.

E. D. BARSTOW
Sanitary Engineer
Water Supply—Water Treatment
Sewerage—Sewage Treatment
Reports—Plans—Construction
163 N. Union St., Akron 4, Ohio

HARLAND BARTHOLOMEW AND ASSOCIATES
City Planners — Civil Engineers
Landscape Architects
Atlanta, Ga. — St. Louis, Mo.
Honolulu, T. H.

THE HARWOOD BEEBE CO.
Municipal and Civil Engineers
Water Supply and Purification, Sewerage and Sewage Treatment, Streets, Light & Power, Airports
171 Pine St.
Spartanburg, S. C.

Beling Engineering Consultants
Designers of
Water and Sewer Systems for Municipalities
Rated in Dun & Bradstreet
MOLINE, ILLINOIS
Peoria Champaign Burlington

HOWARD K. BELL
Consulting Engineers
S. S. Bell C. G. Gaither J. K. Latham
Water Works — Sewage Disposal
Water Purification — Sewerage
Streets — Refuse Disposal
Industrial Wastes
353 S. Limestone St. Lexington, Ky.

RUSSELL VANNEST BLACK
Planning Consultant
Comprehensive Plans and Reports • Zoning and Subdivision-Control Ordinances • Redevelopment • Site Plans for Housing, Parks and Institution Grounds • Advisory Services.
New Hope, Pa.

CLINTON L. BOGERT ASSOCIATES
Consulting Engineers
Clinton L. Bogert — Ivan L. Bogert
Water and Sewage Works
Refuse Disposal — Industrial Wastes
Drainage — Flood Control
624 Madison Ave., New York 22, N. Y.

LOUIS P. BOOZ
Consulting Engineers
Incineration
Sanitation
Water Treatment
Industrial Wastes
51 E. 42 St., New York 18, N. Y.

Bowe, Albertson & Associates
Engineers
Water and Sewage Works
Industrial Wastes—Refuse Disposal—Municipal Projects
Airfields—Industrial Buildings
Reports—Designs—Estimates
Valuations—Laboratory Service
110 William St. New York 38, N. Y.

Briley, Wild & Associates
Consulting Engineers
Reports — Supervision
Designs — Appraisals
Consultation
8 N. Wild Olive Avenue
Daytona Beach, Florida

BUCK, SEIFERT AND JOST
Consulting Engineers
Water Supply, Sewage Disposal, Hydraulic Developments, Valuations and Reports.
Chemical and Biological Laboratories.
112 East 19th Street — New York 3, N. Y.

FRANCIS H. BULOT CONSULTING ENGINEERS, INC.
• Water Supply & Purification
• Flood Control & Drainage
• Subdivisions
• Design
• Sewerage & Sewage Treatment
• Bridges & Highways
• City Planning
• Administration
• Refuse Disposal & Incineration
• Airports
• Investigations & Reports
• Finance
Los Angeles 13, 411 West 5th Street
Pasadena 1, California, 1041 East Green Street
Costa Mesa, 116 East Broadway

BRAZIL CHIMNEY DIVISION
WILLIAM E. BURGER COMPANY
CONTRACTORS • ENGINEERS
Designers and Builders of
Public Buildings • Churches • Industrial Buildings
Steam cleaning, sand blasting, waterproofing, caulking, concrete restoration
144 West 47th Street — BOulevard 8-7709 — Chicago 9, Ill.

Philip Burgess
Chester A. Niple
Ben K. Bare
Clayton C. Bull
E. F. Hatch
Raymond Fuller
Tahlman Krumm
R. E. Peters
Robert Wolfe
BURGESS & NIPLE
CIVIL AND SANITARY ENGINEERS
WATER AND SEWAGE CONSULTANTS
2015 WEST FIFTH AVENUE — COLUMBUS 12, OHIO
Design
Construction
Reports
Planning
Valuations
Rates
Supervision
Laboratory

RALPH H. BURKE, INC.
Consulting Engineers
Plans — Construction Supervision — Reports
Complete Architectural and Engineering Services
Expressways — Grade Separations — Municipal Works
Underground Garages — Parking Structures — Traffic Studies
Airports and Air Terminal Buildings — Parks — Field Houses — Shore Protection
20 North Wacker Drive — Chicago 6, Illinois

BURNS & McDONNELL
Consulting and BMCA *Designing Engineers*
Kansas City 2, Mo., P. O. Box 7088
Cleveland 14, Ohio, 1404 East 9th St.

THE J. M. CLEMINSHAW COMPANY
"Our 31st Year"
APPRAISALS—REVALUATIONS
Specializing in the revaluation of Real Estate and Personal Property for local tax equalization purposes. Illustrated brochure on request.
UNION COMMERCE BUILDING, CLEVELAND, OHIO

CHAS. W. COLE & SON
ENGINEERS - ARCHITECTS
MUNICIPAL — INDUSTRIAL — COMMERCIAL
WATER SUPPLY — SEWERAGE — SEWAGE TREATMENT
220 W. LaSalle St. — Phone: 4-0127 — South Bend, Indiana

COLE • LAYER • TRUMBLE COMPANY
REVALUATIONS CLT APPRAISALS
11 W. Monument Ave • Dayton 2, Ohio
Municipal and County Tax Revaluations
Descriptive Material upon Request

CONSOER, TOWNSEND & ASSOCIATES
Water Supply, Sewerage, Flood Control and Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas and Electric Transmission Lines.
351 EAST OHIO STREET — CHICAGO 11, ILLINOIS

FLOYD G. BROWNE AND ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Power and Industrial Plants, Industrial Waste, Laboratory, Reports, Design, Supervision.
123 W. Church St., Marion, Ohio

CAMP, DRESSER & McKEE
Consulting Engineers
Water Works, Water Treatment, Sewerage, Sewage Treatment, Municipal, Industrial Wastes, Investigations, Reports, Design, Supervision, Research, Development, Flood Control.
6 Beacon Street — Boston 8, Mass.

Capitol Engineering Corp.
Engineers—Constructors—Management
Water Works, Sewage Disposal, Airports, Dams and Bridges, Roads and Streets, Planning, Design and Surveys.
Dillsburg, Pa.—Rochester, N. Y. Dallas, Texas

MATTHEW CAREY
Municipal Finance Consultant
Specializing in Financing Off-Street Parking Facilities
Financial Advisor for Highland Park, Royal Oak, Wyandotte, Michigan and Kankakee, Illinois Automobile Parking System Revenue Bond Issues.
Box 3703 Kercheval Station
Detroit 15, Mich.

COTTON, PIERCE, STREANDER, INC.
Associated Engineering Consultants
132 Nassau Street, New York 7, N. Y. — P. O. Box 198, Hyde Park 36, Mass.
1405 W. Erie Ave., Philadelphia 40, Pa. — 55 Caroline Rd., Gowanda, N. Y.
Water Supply, Treatment, Distribution—Sewage, Sewage Treatment, Refuse Disposal, Air Pollution. Power Plants, Incinerator Plants. Reports, Plans, Supervision—Laboratory Service

THE CHESTER ENGINEERS
Water Supply and Purification
Sewage and Industrial Waste Treatment—Power Plant—Incineration—Gas Systems
Valuations—Rates—Management
Laboratory—City Planning
210 E. Park Way, Pittsburgh 12, Penna.

DAMON & FOSTER
Consulting Civil Engineers and Surveyors
Water Supply, Sewerage, Sewage Disposal, Surveys, Land Subdivision, City and Town Planning, Reports, Design, Supervision.
Sharon Hill — Pennsylvania

WILLIAM G. CHRISTY
Consulting Engineer
Air Pollution Control
Combustion — Smoke Control
34 Park Row, New York 38, N. Y.

DE LEUW, CATHER & COMPANY
Consulting Engineers
Public Transit, Traffic and Parking Problems
Railroads — Subways — Grade Separations — Tunnels
Major Thoroughfares — Power Plants — Expressways — Municipal Works
150 North Wacker Drive, Chicago 6, Ill. — 79 McAllister Street, San Francisco 2, Calif.

C. C. COLLINGS & CO., Inc.
Financial Consultants
Specialists in Direct Obligation, Revenue & Municipal Authority Financing
Fidelity-Philadelphia Trust Bldg.
Philadelphia (9), Penna.

EDWARDS, KELCEY AND BECK
Consulting Engineers
Surveys — Reports — Economic Studies — Transportation, Traffic and Parking Studies — Design — Supervision — Management — Port and Harbor Works — Terminals — Expressways — Highways — Grade Separations — Bridges — Tunnels — Water Supply
3 William Street, Newark 2, N. J.
New York — *Boston* — *Philadelphia*

COMMUNITY PLANNING ASSOCIATES, INC.
● Comprehensive Plans ● Zoning Ordinances and Subdivisions Regulations ● Basic Planning Studies ● Site Plans for Subdivisions, Shopping Centers, and Industrial Districts ● Surveys and Maps ●
92A Nassau Street — Princeton, N. J.

ELECTRICAL TESTING LABORATORIES, INC.
Electrical and General Testing—Inspections—Research—Certification
2 EAST END AVENUE AT 79th STREET, NEW YORK 21, N. Y.
BUtterfield 8-2600

DICKINSON & WHITE
ENGINEERS—SINCE 1909
Design and Supervision of Municipal Improvements — Water Supply & Purification — Sewerage and Sewage Disposal — Reinforced Concrete and Structures — Reports, Valuations and Appraisals
115 N. Spring St., Little Rock, Ark.

FAIRCHILD AERIAL SURVEYS, INC.
Photogrammetric Engineers
Topographical Maps, Cadastral Maps, Photographic Mosaics
Aerial Photography in All Phases . . . Nation-wide Service
(26 years' experience supplying city and county map needs)
Western Division: 224 E. 11th St., Los Angeles 15, Calif. — Eastern Division: 21-21 41st Ave., Long Island City 1, N. Y.

GEORGE F. EMERY
Planning & Zoning Consultant
Comprehensive Community Plans
Special Studies — Reports — Expert Testimony — Housing — Redevelopment Parking
2624 N.E. 24 St., Ft. Lauderdale, Fla.

Established 1913
WALTER H. FLOOD & CO.
CHEMICAL ENGINEERS
INSPECTION AND TESTING OF MATERIALS AND STRUCTURES
STREETS — ROADS — AIRPORTS
BUILDING AND GENERAL ENGINEERING CONSTRUCTION
Resident Inspection—Chemical & Physical Tests—Soil Boring & Investigation—Concrete Core Cutting
SPECIFICATIONS — REPORTS — RESEARCH
6102 S. BLACKSTONE AVENUE — CHICAGO 37, ILL.

Fay, Spofford & Thorndike
Engineers
Airports—Bridges—Turnpikes
Port Developments—Water Supply
Drainage—Sewerage
Commercial Buildings
BOSTON — NEW YORK

Ford, Bacon & Davis
Design — Construction — Engineers — Reports — Valuation
New York • Chicago • Los Angeles

Finkbeiner, Pettis & Strout
Carleton S. Finkbeiner — C. E. Pettis
Harold K. Strout
Consulting Engineers
Reports Designs Supervision
Water Supply, Water Treatment, Sewerage, Sewage Treatment, Wastes Treatment, Valuations & Appraisals.
518 Jefferson Avenue — Toledo 4, Ohio

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Engineers
Dams, Water Works, Sewage, Industrial Wastes & Garbage Disposal, Highways, Bridges & Airports Traffic & Parking—Appraisals, Investigations and Reports.
HARRISBURG, PENNA.
Pittsburgh, Pa. — Daytona Beach, Fla. — *Branch Offices* Chesapeake, W. Va. — Philadelphia, Pa. — Pleasantville, N. J.

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

HARRY D. FREEMAN
Planning Consultant
Development of master plans for cities and environs; design of new towns and other land planning; special reports on zoning, recreation, commercial centers, industrial areas and related subjects.
3565 S.W. Council Crest Drive
Portland 1, Oregon

THE HALLER TESTING LABORATORIES, INC.
Consulting-Testing-Inspection
801 Second Ave., New York, N. Y.
164 Cummington St., Boston, Mass.
336 Leland Ave., Plainfield, N. J.

Frank E. Harley & Associates
Consulting Engineers
Water Works — Sewage — Highway—Municipal Problems
Harley Bldg., 260 Godwin Ave., Wyckoff, N. J.
Garden State Parkway Div., Route 34, Matawan, N. J.

JOHN J. HARTE CO.
Engineers—Architects
Water—Sewer—Gas—Paving
Airports—Electric Distribution
Drainage—Structural—Site Planning
Atlanta, Ga. New York, N. Y.

Fridy - Gauker - Truscott & Fridy
Architects & Engineers
Water . Sewerage . Industrial Waste Incineration . Power & Distribution Airport . Building . Town Planing
1321 Arch Street . Philadelphia 7, Pa.

WHAT IS YOUR WATER PROBLEM?
Write, Wire or Phone:
Geo-Research
Consultants: Geology — Geophysics — Mineralogy
Syracuse 10, N. Y., Phone: 4-6454
A DIVISION OF SYRACUSE UNIVERSITY RESEARCH INSTITUTE

F. R. FRIEDEWALD
Consulting Engineer
Waterworks - Sewage - Gas Supply and Distribution - Drainage - Streets Improvements - Estimates Reports - Surveys
311 South First St., Belleville, Ill.
Phone: Belleville 3225

JOHN J. GOKEY ASSOCIATES
Municipal Appraisers
Appraising Real Estate since 1934
Former Chief Assessor Town of Irondequoit, N. Y.
2370 Elmwood Avenue Rochester 18, N. Y.

EMERY C. FURRER
City Planning, Municipal and Sanitary Engineering, Building Codes and Zoning Ordinances, Airports, Drainage, Flood Control, Industrial Plants, Design of Fixed and Movable Bridges.
64 W. Randolph St. Chicago 1, Ill.

HOWARD R. GREEN COMPANY *40th Year*
Consulting Engineers
Municipal and Industrial Water Supply and Treatment; Sewerage and Disposal
Airports, Paving, Bridges, Industrial Structures
BEVER BUILDING, CEDAR RAPIDS, IOWA

GEORGE A. GIESEKE
Consulting Engineers
Municipal Engineering Problems
Surveying, Housing Development
Water Supply, Industrial Wastes
Sewerage, Refuse Incineration Design
Supervision of Construction
1405 W. Erie Ave., Phila 40, Pa.

GRIFFENHAGEN & ASSOCIATES
Consultants in Public Administration and Finance
Counsel and technical assistance on organization, procedure, personnel, physical facilities, finance, policies, and plans.
Washington Milwaukee Boston Los Angeles Chicago New York

GILBERT ASSOCIATES, INC.
Engineers and Consultants
Water Supply and Purification
Sewage Treatment and Industrial Waste, Chemical Laboratory Service
New York—Reading, Pa.—Washington—Philadelphia—Houston

L. B. GRIFFITH
Consulting Engineer
Research, Reports and Designs on
Sewage and Industrial Waste Treatment.
22 S. EDISON STREET ARLINGTON 4, VA.

GLACE AND GLACE
Consulting Sanitary Engineers
Sewerage, Sewage and Industrial Wastes Treatment
Design, Construction and Supervision of Operation
Laboratory Service
Front at Boas St., Harrisburg, Pa.

GUNITE CONCRETE & CONSTRUCTION COMPANY
Engineers—Cement Gun Specialists—Contractors
LININGS — ENCASING — INSULATING — REPAIRING
FIREPROOFING — RENOVATING — NEW CONSTRUCTION
1301 Woodswether Rd. Kansas City 5, Mo.
2016 West Walnut St. Chicago 12, Ill.
2036 Addison Houston 25, Texas
St. Louis — Minneapolis — Denver — New Orleans

GREELEY & HANSEN
Engineers
Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
220 S. State Street, Chicago 4

HAPMAN-DUTTON COMPANY
Engineers
CONSULTATION, DESIGN and INSTALLATION
of Garbage Cooking Units for Hog Feeding, to meet State Laws
Write — Wire — Phone
630-A Gibson St. Phone 3-1675 Kalamazoo, Michigan

The Consulting Engineers' section of THE MUNICIPAL INDEX for 1954 will be found on pages 70 to 87

FREDERIC R. HARRIS, INC. *Consulting Engineers*
Frederick H. Dechant — Water Supply, Airports — Investigations, 123 So. Broad Street, Philadelphia 9, Pa.
Edward J. Quirin — MUNICIPAL AND INDUSTRIAL DEVELOPMENTS; Sewage and Wastes Disposal, Highways, Bridges; PORT AND HARBOR WORKS; Designs, 27 William Street, New York 5, N. Y.
Eugene H. Harlow — Incinerators, Flood Control; Appraisals, Ferry Building, San Francisco 11, Cal.

HASKINS, RIDDLE & SHARP
Consulting Engineers
Civil—Sanitary—Hydraulic
Charles A. Haskins
P. Clifford Sharp
Wm. G. Riddle
Finance Bldg. Kansas City 6, Mo.

ROBERT BRUCE HARRIS
Landscape & Golf Course Architect
GOLF COURSES • PARKS • SCHOOL GROUNDS • INSTITUTIONS • SITE PLANNING
664 N. MICHIGAN AVENUE · CHICAGO 11 · ILLINOIS

The American City Professional Service Directory

HAVENS AND EMERSON
W. L. Havens C. A. Emerson
A. A. Burger F. C. Tolles F. W. Jones
W. L. Leach H. H. Moseley J. W. Avery
F. S. Palocsay E. S. Ordway
Consulting Engineers
Water, Sewerage, Garbage, Industrial Wastes, Valuations—Laboratories
Leader Bldg. Woolworth Bldg.
Cleveland 14, O. New York 7, N. Y.

HAZEN AND SAWYER
Engineers
Richard Hazen Alfred W. Sawyer
Municipal and Industrial Water Supply
Purification and Distribution
Sewage Works and Waste Disposal
Investigations, Design,
Supervision of Construction and Operation
110 East 42nd St. New York 17, N. Y.

HENNINGSON, DURHAM & RICHARDSON
Consulting Engineers since 1917 for more than 700 cities and towns.
Water Works, Light and Power, Sewers, Sewage Treatment, Reports, Flood Control, Appraisals, Drainage, Rural Electrification.
2982 Harney St., Omaha 2, Nebraska

HILL and HILL
Engineers
Sewage and Waste Disposal, Water Supply and Filtration, Dams, Reservoirs, Tunnels, Airport and Topographic Surveys
Home Office: 8 Gibson Street North East, Pa.

CHAUNCEY A. HYATT
Consultant Specialist on Swimming Pools Exclusively
Design — Operation — Maintenance — Renovation of existing pools.
Plans checked — Reports — Surveys.
"35 Years of Experience Covering Thousands of Pools" 5555 Sheridan Rd., Chicago 40, Ill.

Established 1914
CITY, COUNTY & REGIONAL PLANS & ZONING STUDIES
JOHN LEON HOFFMAN, Inc.
Atlanta, Georgia
519 Forsyth Building
Forsyth, Georgia
200 W. Adams Street

J. L. JACOBS & COMPANY
Public Administration Consultants and Engineers Since 1915
Property Appraisals and Tax Equalization—Finance—Organization—Procedures—Fringe Area Problems—Facilities—Personnel Classification and Pay Plans
53 W. JACKSON BLVD., CHICAGO 4, ILLINOIS
Other Offices; Boston, Los Angeles, Washington, D. C.

WILLIAM T. HOOPER, JR.
Consulting Engineers
Water Supply, Sewerage and Sewage Treatment; Municipal, Industrial and Structual Design; Reports, Supervision and Laboratory Service.
804 Belvidere St., Waukegan, Ill.

ENGINEERING OFFICE OF CLYDE C. KENNEDY
COMPLETE MUNICIPAL ENGINEERING SERVICE
- WATER SUPPLY
- SEWAGE AND WASTE TREATMENT
- SEWAGE RECLAMATION

CHEMICAL AND BIOLOGICAL LABORATORY
604 Mission Street
San Francisco 5

CITY DEPARTMENTS
can depend upon this Professional Service Directory as a thoroughly reliable "Who's Who" among Consulting Engineers Specializing in Municipal Work.

L. E. LOWRY
Consultant
Fire Alarm Systems — Police Signaling Systems
Surveys — Reports — Recommendations — Plans — Specifications
1235 Ridge Avenue Evanston, Illinois

HORNER & SHIFRIN
Consulting Engineer
W. W. Horner H. Shifrin
V. C. Lischer E. E. Bloss
Airports—Hydraulic Engineering
Sewerage—Sewage Treatment
Water Supply — Municipal Engineering—Reports.
Shell Building, St. Louis 3, Mo.

METCALF & EDDY
Engineers
Water, Sewage, Drainage, Refuse and Industrial Wastes Problems
Air Fields, Laboratory, Valuations
Statler Building, Boston 16, Mass.

Harold Hoskins & Associates
(Successors to Scott & Scott, Inc.)
Consulting Engineers
Sewers and Sewage Treatment
Paving Water Supply Drainage
Bridges Airports Reports
Power Plants Surveys
231 N. 11th St., Lincoln 8, Nebr.
720½ 9th St., Greeley, Colorado

JOHN M. MUDDEMAN & ASSOCIATES
Planning Consultants
STONY BROOK AND SEAFORD, LONG ISLAND, N. Y.
Comprehensive Municipal Planning Programs—Subdivisions—Zoning—Traffic—Master Plans—Airports—Building Codes and General Consulting Service
Tax Maps and Revaluation Surveys—Complete Reports for Capital Budgets and Municipal Finance

ROBERT W. HUNT CO.
Engineers
Inspection—Tests—Consultation
Pipe and Appurtenances; Paving and Engineering Materials; Green and Treated Lumber
175 W. Jackson Blvd., Chicago 4 and all large industrial centers.

NUSSBAUMER - CLARKE and VELZY, INC.
CONSULTING ENGINEERS
SEWAGE TREATMENT — WATER SUPPLY — INCINERATION
DRAINAGE — TOWN PLANNING — APPRAISALS
327 Franklin St., Buffalo 2, N. Y. 52 Vanderbilt Ave., New York 17, N. Y.

Jenkins, Merchant & Nankivil
Consulting Engineers
Municipal Improvements Sewerage
Power Development Water Systems
Traffic Surveys Industrial Plants
Flood Control Recreational Facilities
Airports Investigations and Reports
805 East Miller St. Springfield, Ill.

THE H. C. NUTTING COMPANY
Inspecting and Testing Engineers
Water Waste Survey Trunk Main Surveys Water Distribution Studies
Chemical and Physical Testing of Paving and Building Materials—Metals—Pipe Oils, Etc.
4120 Airport Road Cincinnati 26, Ohio

THE JENNINGS-LAWRENCE CO.
Civil & Municipal Engineers
Water Supply—Treatment—Distribution
Sewerage—Sewage Treatment—Paving
Drainage—Dams Surveys—Mapping
Reports Plans—Supervision
1392 King Ave. Columbus 12, Ohio

JONES, HENRY & WILLIAMS
Formerly Jones, Henry & Schoenmaker
Consulting Sanitary Engineers
Water Works
Sewerage and Treatment
Waste Disposal
Security Bldg. Toledo 4, Ohio

Lublin, McGaughy & Assoc.
Architects and Consulting Engineers
Water supply, sewage disposal, airports, streets, improvements, municipal planning, buildings, recreational facilities, reports and appraisals.
21st at Llewellyn Ave., Norfolk 10, Va.
1001 Connecticut Ave., Washington, D. C.

J. B. McCrary Company, Inc.
Contractors & Engineers
Municipal Improvements
Water Works, Sewers,
Sewage Disposal
1408 Atlanta Federal Savings Bldg.
Atlanta, Georgia

McDONALD, HOOPER & DeJARNETTE
Consulting Engineers
Surveys • Mapping • Stadiums
Streets • Sewage • Drainage
Water • Roads
Design and Supervision
Andalusia, Alabama

KAISER ENGINEERS
Div. of Henry J. Kaiser Co.
General Engineering Services
Public Works
1924 Broadway, Oakland 12, Cal.
Phone: Twin Oaks 3-4000

PALMER AND BAKER, INC.
CONSULTING ENGINEERS—ARCHITECTS—NAVAL ARCHITECTS—MARINE ENGINEERS
Surveys — Reports — Design — Supervision — Consultation
Transportation and Traffic Problems: Tunnels, Bridges, Highways, Airports; Industrial Buildings; Waterfront and Harbor Structures; Graving and Floating Dry Docks; Vessels, Boats and Floating Equipment.
Complete Soils, Materials and Chemical Laboratories
Mobile, Ala. New Orleans, La. Washington, D. C. Houston, Texas

JOHN J. KASSNER & CO.
Consulting Engineers
John J. Kassner David Levine
Preliminary Studies, Designs, Contracts, Specifications, Highways, Expressways, Structures, Drainage, Sewerage, Waterfront, Site Planning, Housing, Parking, Parks.
111 Broadway New York 6, N. Y.

PARSONS, BRINCKERHOFF, HALL & MACDONALD
Engineers
Airports, Bridges, Tunnels, Highways, Traffic & Transportation Reports,
Subways, Foundations, Harbor Works, Valuations, Industrial Buildings,
Power Development, Dams, Sewerage, Water Supply.
51 Broadway, New York 6, N. Y.

KEIS & HOLROYD
Consulting Engineers
Formerly Solomon & Keis
Since 1906
Water Supply and Purification, Sewerage and Sewage Treatment, Garbage and Refuse Disposal and Incineration, Industrial Buildings
Troy, N. Y. Ft. Lauderdale, Fla.

THE PITOMETER ASSOCIATES, INC.
Engineers
Water Waste Surveys Trunk Main Surveys Water Distribution Studies
Water Measurement and Special Hydraulic Investigations
50 Church Street New York 7, N. Y.

A. C. KIRKWOOD AND ASSOCIATES
Engineers — Consultants
Wirthman Bldg.
Kansas City 3, Mo.

PITTSBURGH TESTING LABORATORY
INSPECTING ENGINEERS AND CHEMISTS
PITTSBURGH, PA.
Branch Offices in Principal Cities

KNAPPEN-TIPPETTS-ABBETT-McCARTHY ENGINEERING CO.
Ports, Harbors, Flood Control, Irrigation, Power, Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.
62 West 47th St., New York City

CLYDE POTTS ASSOCIATES
Weston Gavett Stanley N. Williams
Sewerage and Sewage Disposal — Water Works and Water Supply
Valuations and Appraisals
30 CHURCH STREET NEW YORK 7, N. Y.

MORRIS KNOWLES Inc
Engineers
Water Supply and Purification, Sewerage and Sewage Disposal Valuations, Laboratory, City Planning.
1312 Park Bldg.
Pittsburgh 22, Pa.

RADER ENGINEERING CO.
Airports, Bridges, Roads and Streets, Port Developments, Water Works, Drainage, Sewerage, Sewage Disposal, Transportation, Traffic and Parking Studies
Consultants — Investigations — Reports — Valuations — Designs — Specifications
Supervision of Construction
111 N.E. 2nd Ave. Miami 32, Florida
1025 Connecticut Ave. Washington, D. C.

LOUIS J. KROGER AND ASSOCIATES
Administrative Surveys—Personnel Classification—Salary Plans—Civil Service Testing
25 California Street San Francisco
204 Rowan Bldg., Los Angeles
453 Morgan Bldg., Portland

RAYNOR AERIAL SURVEYS
• Topographic Maps
• Aerial Photography
• Photogrammetric Surveys
GEORGETOWN, CONNECTICUT
Tax Maps •
Surveys •
Controlled Mosaics •

HAROLD M. LEWIS
Consulting Engineer, City Planner
Municipal & Regional Planning
Analyses of urban problems, zoning, master plans, traffic, parking, subdivisions, redevelopment.
Reports—Plans—Ordinances
15 Park Row New York 38, N. Y.

REVERE ENGINEERING CO.
De Soto B. McCabe, Jr. *Consulting Engineers* John D. Hooper
Water Sources and Supply, Sewerage and Sewage Treatment.
Planning and Programming, Conservation of Resources.
Reports and Appraisals, Buildings and Bridges, Highways and Airports.
Municipal Improvements, Industrial Management, Advisors to Management.
8340 West Grand Ave. Phone 3-1030 River Grove (Chicago Suburb), Illinois

WM. S. LOZIER CO.
Consulting Engineers
Sewerage, Sewage Disposal, Water Supply, Water Purification, Refuse Disposal
10 Gibbs St., Rochester 4, N. Y.

ROBERT AND COMPANY ASSOCIATES
Architects and Engineers
ATLANTA, GEORGIA
Water Supply
Sewage Disposal
Industrial Wastes
Incinerators
Power Plants
Valuations

The American City Professional Service Directory

THE JOHN McGRADY CO.
Civil and Municipal Engineers
Charleston, S. C.

GEORGE B. MEBUS
Consulting Engineers
Water Supply Sewage Treatment
Industrial Waste Treatment
Northwestern Natl. Bank Bldg.,
Glenside, Pa.

STUART M. MERTZ
Landscape Architect
Planning Consultant
Park and Recreation Areas, Schools
Hospital and Institution Grounds
Commercial Centers, Subdivisions
Cemeteries, Housing, City Plans, etc.
7908 Bonhomme, St. Louis 5, Mo.

Metropolitan Planners, Inc.
Planning Consultants
Lawrence V. Sheridan
Kenneth L. Schellie
City and County Planning - Zoning - Subdivision and Shopping Center Design - Urban Redevelopment - Airport Zoning - Industrial District Plans - Landscape Architecture
800 Bd. of Trade Bldg.,
Indianapolis 4, Ind.

RUSSELL and AXON
Consulting Engineers
Civil—Sanitary—Structural—Industrial—Electrical—Rate Investigations
408 Olive Street
St. Louis 2, Mo.
Municipal Airport
Daytona Beach, Fla.

LEONARD MISCALL AND ASSOCIATES
Consultants
Municipal Problems, Planning and Zoning Studies and Reports
111 Parker Pl. Ithaca, New York

IRBY SEAY COMPANY
CONSULTING ENGINEERS
WATER SUPPLY & TREATMENT
DISTRIBUTION
SEWAGE SYSTEMS & TREATMENT
USE SURVEYS & EVALUATION
Goodwyn Institute Bldg., MEMPHIS 3, TENNESSEE Telephone—8-2733

B. L. Oliver & Company
Municipal Consulting Engineers
Water System, Electric Plants, Distribution, Disposal Plants, Sewerage, Paving and Drainage, Gas Systems, Utility Reports, Rates and Appraisals.
Grand Avenue Bank Bldg.
Kansas City 8, Missouri

SEELYE STEVENSON VALUE & KNECHT
Consulting Engineers
Airports, Highways, Dams, Concrete, Steel, Welding, Foundations, Stadia, Appraisals and Industrial Plants
101 Park Avenue
New York 17, N. Y.

Pan American Consultants
Engineers
River & Harbor Development—Hydroelectric Power—Dams—Ports—Flood Control—Irrigation—Reclamation—Airports—Water Supply—Sewage & Industrial Waste Treatment—Reports—Consultation—Design
Midland Building
176 West Adams St., Chicago 3

SERVIS, VAN DOREN & HAZARD
Engineers
STRUCTURES, BUILDINGS, FOUNDATIONS, SEWERAGE, WATER SUPPLY, STREETS, HIGHWAYS, AIRPORTS, FLOOD CONTROL, DRAINAGE, POWER PLANTS, ELECTRICAL DISTRIBUTION.
2015 Gage Boulevard Phone 4-6603 Topeka, Kansas

PATZIG TESTING LABORATORIES
Inspection Service
Chemical and Physical Testing of Paving and Building Materials, Metals, Fuels, Oils, Water, etc.
2215 Ingersoll Ave., Des Moines, Ia.

SMITH AND GILLESPIE
Consulting Engineers
JACKSONVILLE, FLORIDA
An Organization of Experienced Engineers Specializing in Municipal Utilities and Public Works

BOYD E. PHELPS, INC.
Architects and Engineers
Water Supply and Purification
Sewerage and Sewage Treatment
Power Plants, Buildings, Investigations
Reports, Appraisals, Rate Studies
1000 Washington St., Michigan City, Ind.

HAROLD T. SMITH, INC.
Engineers and Contractors
Water Supply, Water Works, Hydroelectric Projects, Irrigation Projects, Reports, Design
1028 Connecticut Ave. NW, Washington 6, D. C.
New Delhi, India
Quito, Ecuador
Cali, Colombia
Lima, Peru

CHANGED YOUR ADDRESS?
If so, please notify the publishers as we are anxious to have your card correct in this Directory. Thank you.

SNYDER, McLELLAN and WATSON
Financial and Engineering Counsellors
Studies-Reports
Public Relations
Bond Promotion
Surveys
Design
Engineering
WATER
SEWERAGE
Hillsboro, Indiana

Malcolm Pirnie Engineers
Civil and Sanitary Engineers
Malcolm Pirnie Ernest W. Whitlock
Robert D. Mitchell Carl A. Arenander
Malcolm Pirnie, Jr.
Investigations, Reports, Plans
Supervision of Construction and Operations
Appraisals and Rates
25 W. 43rd St. New York 36, N. Y.

CONSULTING ENGINEERS
not already represented in this directory can secure rates for these cards and further particulars of our service by writing to—
Advertising Department
THE AMERICAN CITY
470 Fourth Avenue
New York 16, N. Y.

POLK, POWELL & HENDON
Engineers—Consultants
A. O. Polk Harry H. Hendon
Hugh A. Powell
Water systems, sewers, sewage treatment plants, steam and hydro plants, dams, drainage, industrial buildings, municipal planning reports, plans, estimates, supervision.
620 Stallings Bldg., Birmingham 3, Ala.

The American City Professional Service Directory

ALEXANDER POTTER ASSOCIATES
Consulting Engineers
Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.
50 Church Street, New York 7, N. Y.

STANLEY ENGINEERING CO.
Consulting Engineers
Airports—Drainage—Electric Power
Flood Control—Rate Studies
Sewerage—Valuations—Water Works
Hershey Bldg. Muscatine, Iowa

HENRY B. STEEG & ASSOCIATES
Engineers
Sewage Treatment, Water Supply
Garbage and Refuse Disposal
2331 N. Meridian Street
P. O. Box 5052, Station A
Indianapolis 8, Ind.

OFFICE of A. CARL STELLING
Consulting Landscape Architects and Site Planners
Communities, Subdivisions, Housing Projects, Parks and Recreation Areas, Schools and Universities, etc.
127 East 39th St., New York 16, N. Y.

PRELOAD ENGINEERS INC.
Founded—1934
Consultants in Prestressed Design
Designers of more than 800 prestressed concrete bridges, buildings, tanks and high pressure pipe lines erected in North America since 1934.
955 North Monroe Street, Arlington, Va.

D. B. STEINMAN
Consulting Engineer
Bridges
Design, Construction, Strengthening, Investigations, Reports, Advisory Service
117 Liberty Street New York 6, N. Y.

JOHN G. REUTTER
Professional Engineer
Municipal, Industrial Water Supply and Treatment
Sewage and Waste Disposal
Housing Development, Plot Plans
Land Surveys
708 Federal St. Camden 3, N. J.
WOodlawn 4-1820

ROBERT H. STELLWAGEN
Consulting Engineer
Municipal and Industrial Waste Problems
Collection, Incineration, Salvage, Pumping, Treatment, Testing
629 Buhl Bldg. Detroit 26, Mich.

LADISLAS SEGOE & ASSOC.
City Planners—Consulting Engineers
Comprehensive City Plans ● Zoning Plans, Ordinances and Expert Testimony ● Traffic, Transit, Transportation Studies ● Housing Surveys ● Urban Redevelopment & Housing Projects.
517 Provident Bank Bldg., Cincinnati 2

THE STERLING COMPANY
Engineers — Surveyors
Civil — Sanitary — Sewerage Disposal — Structural — Aerophotography
10700 St. Charles Rd., St. Ann 14, Missouri

I. S. SHATTUCK
City Plans—Land Use, Zoning, Industrial, Residential and other Urban Developments, Subdivision Design,
Traffic and Parking Plans.
P. O. Box 312 Wayzata, Minn.

ALDEN E. STILSON & ASSOCIATES, LIMITED
Consulting Engineers
Water Supply—Sewerage—Waste Disposal—Bridges
Highways—Industrial Buildings—Studies—Surveys—Reports
209 SOUTH HIGH STREET COLUMBUS, OHIO

"WHO'S WHO"
City Departments can depend upon this Directory as a thoroughly reliable "Who's Who Among Consulting Engineers Specializing in Municipal Work."

IN THE MUNICIPAL PUBLIC WORKS and Utilities Fields, the Consulting Engineer is frequently the first man whom manufacturers of operating equipment want to reach.

If you are a Consulting Engineer and are not already represented in this directory, you can secure rates for these cards and further particulars of our service by writing to

Advertising Department
THE AMERICAN CITY, 470 Fourth Ave., New York 16, N. Y.

GEORGE W. SIMONS, JR. AND ASSOCIATES
Planning Consultants and Municipal Engineers
City, County Plans—Zoning—Redevelopment and Housing—Traffic and Parking Studies — Parks — Recreation — Subdivisions—Landscaping.
402 Hildebrandt Bldg.,
Jacksonville 2, Florida

TOLEDO TESTING LABORATORY
Inspection and Testing of Paving and Engineering Materials
Sub-Surface Exploration and Soil Tests
1810 North 12th Street Toledo 2, Ohio

SINGSTAD & BAILLIE
Consulting Engineers
Ole Singstad David G. Baillie, Jr.
Tunnels, Subways, Highways, Foundations, Parking Garages
Investigations, Reports, Design Specifications, Supervision.
14 State St. New York 4, N. Y.

WAINWRIGHT & RAMSEY Inc.
Consultants on Municipal Finance
70 Pine Street New York 5, N. Y.

J. E. SIRRINE COMPANY
Engineers
Water Supply & Purification
Sewage & Industrial Waste Disposal,
Stream Pollution Reports,
Utilities, Analyses
Greenville South Carolina

ARE YOU A CITY OFFICIAL?
You will find this Directory a reliable "WHO'S WHO" of consulting engineers who specialize in municipal work.

The American City Professional Service Directory

HENRY W. TAYLOR
Consulting Engineers
Water Supply, Sewerage
Refuse Disposal, Incineration
Industrial Developments
151 West Merrick Road,
Freeport, N. Y.

TOWN PLANNING
IN ALL ITS PHASES
TECHNICAL PLANNING
ASSOCIATES, Inc.
New Haven 10 Conn.

FRED W. TUEMMLER
AND ASSOCIATES
Community Planning and Development Consultants
Comprehensive plans, zoning, subdivision regulations; shopping centers; industrial plant location, market analyses; subdivisions, parks, schools.
Telephone— Union 4-5500
Professional Building Hyattsville, Maryland

UHLMANN & ASSOCIATES
Paul A. Uhlmann H. E. Bonhan
Carl E. Kuck Nye Grant
Consulting Engineers
Sewage and Industrial Waste Treatment
Water Supply and Purification
1441 N. High St. Columbus 1, O.

J. STEPHEN WATKINS
J. S. WATKINS G. R. WATKINS
CONSULTING ENGINEERS
Municipal and Industrial Engineering, Water Supply and Purification, Sewerage and Sewage Treatment, Highways and Structures, Reports, Investigations and Rate Structures.
Main Office:
251 East High Street
Lexington, Kentucky
Branch Office:
901 Hoffman Building
Louisville, Kentucky

YOUR CARD
could be set in this space at reasonable cost
If you are interested, write
THE AMERICAN CITY
470 Fourth Ave., New York 16,
or 1719 Daily News Building
Chicago 6, Ill.

ROY WENZLICK & CO.
SURVEYS: Economic, Planning, Housing, Parking, Zoning
APPRAISALS and REVALUATIONS for tax equalization
706 Chestnut Street, St. Louis 1, Mo.—Phone: GArfield 0707

WILLIAM J. WENZEL
Consulting Engineer
Developing the Great Northwest
Great Falls Montana

WESTON, ECKENFELDER and HOOD, INC.
Consultants
Engineers—Biologists—Chemists
Stream Pollution, Industrial Waste Disposal, Waste Utilization, Water Supply, Toxicity Evaluations, Laboratory Analyses, Surveys, Reports, Research and Development, Process Engineering, Plans and Specifications, Operation Control
45 North Broad Street Ridgewood, New Jersey

WESTON & SAMPSON
Consulting Engineers
Hydraulic and Public Health Engineering—Engineering and Laboratory Investigations, Supervision of Purification Plants
14 Beacon St. Boston, Mass.

WIGHT AND COMPANY
Consulting Engineers
Airfields — Pavements — Sewerage -- Surveys — Reports — Municipal Improvements
Downers Grove, Ill.

WHITMAN & HOWARD, Inc.
Engineers — Consultants
Municipal Planning, Water Supply, Drainage, Sewerage, Industrial and Municipal Waste Treatment
89 Broad St. Boston, Mass.

E. T. WILKINS & ASSOCIATES
APPRAISERS ENGINEERS
Municipal and County Tax Reappraisals
Tax Maps Plat Books Aerial Surveys
235 LEADER BLDG., CLEVELAND, OHIO 404 SHARP BLDG., LINCOLN, NEBR.

WHITMAN, REQUARDT and Associates
Engineers — Consultants
Civil—Sanitary—Structural
Mechanical Electrical
Reports, Plans, Supervision, Appraisals
1301 St. Paul St., Baltimore 2, Md.

A. W. WILLIAMS INSPECTION COMPANY
MOBILE, ALABAMA
Established 1921
Inspections — Tests — Analyses — Sampling
Sub-surface Exploration
Representatives throughout U. S. A. Member A. C. C. I.

WIEDEMAN & SINGLETON
Consulting Engineers
Water Works, Sewers, Sewage Disposal, Appraisals, Valuations, Reports
1303 C. & S. Bank Bldg.,
Atlanta Ga.

WOOD, DOLSON COMPANY, INC.
Wood, Dolson Building New York 23, N. Y.
Tax Equalization Appraisals for Government
56 years of experience and background. A staff of 65 experts in every phase of real and personal property
For highly professional equalization of local taxes, call us collect. ENdicott 2-8900, New York City

WILEY & WILSON
Consulting Engineers
Municipal Planning, Water Supply Sewerage, Sewage and Waste Treatment, Incinerators, Streets and Pavements, Airports, Light and Power Plants. Reports—Plans—Supervision.
905 Peoples Bank Bldg., Lynchburg, Va.
711 West Main St., Richmond 20, Va.

CONSULTING ENGINEERS
not already represented in this directory can secure rates for these cards and further particulars of our service by writing to—
Advertising Department
THE AMERICAN CITY
470 FOURTH AVENUE NEW YORK 16, N. Y.

ZONING CONSULTANTS
Experienced
Advisory Expert Testimony Counsel
Stony Brook, Seaford and New York
Robert C. Richter John M. Muddeman
Main Offices: P. O. Building Stony Brook, New York
Phone: Stony Brook 7-0252

The American City

Index To Advertisers

(Names in italics are advertising agencies)

MAY 1954

Abrams Aerial Survey Corp. 283
Jepson-Murray Adv.
Alabama Pipe Co. 226
Crawford & Porter, Inc.
Allis-Chalmers Tractor Div. 43, 43
Bert S. Gittins Adv.
Allis-Chalmers Mfg. Co. 84
Bert S. Gittins Adv.
American Appraisal Co. 283
Buchen Co.
American Bitumuls & Asphalt Co. 88
Wank & O'Rourke
American Foundry & Mfg. Co...... 234
American Playground Device Co. .. 265
Pettinger-Harding, Inc.
American Woolen Co. 244
Ammann, Photogrammetric Engineers, Jack 211, 283
Claude Aniol & Assoc.
Amplex Corp. 261
Beatty & Oliver, Inc.
Anthracite Equipment Corp. 72
Aqua Survey & Instrument Co. 231
Dinerman & Co., Inc.
Associated General Contractors of America, Inc. 188
Lewis Edwin Ryan, Adv.
Athey Products Corp. 220
Hosler Adv., Inc.
Austin-Western Co. 189
Merrill, McEnroe & Assoc., Inc.
Automatic Voting Machine Corp... 234

Badger Meter Mfg. Co. 70, 71
Klau-Van Pietersom-Dunlap, Inc.
Baker-Lull Corp. 86
G. M. Basford Co.
Baldwin-Lima-Hamilton Corp. ...34, 35
Ketchum, MacLeod & Grove, Inc.
Barber-Greene Co. 280
Buchen Co.
Barco Mfg. Co. 268
Armstrong Adv. Agency
Baughman Mfg. Co. 214
Batz-Hodgson-Neuwochner
Bavin Co., G. D. 217
B & B Engineering Corp. 283
Beaver Pipe Tools, Inc. 245
Meek & Thomas, Inc.
Bell Telephone System 4
N. W. Ayer & Son, Inc.
Bendix Radio, Div. of Bendix Aviation Corp. 271
MacManus, John & Adams, Inc.
Bennett Mfg. Co. 235
Horace A. Laney, Adv.
Bethlehem Steel Co. 246
Jones & Brakeley, Inc.
Bigelow, Kent, Willard & Co. 283
Black & Veatch 283
Blaw-Knox Co. 252
Russell T. Gray, Inc.
Boucher Associates, Henry N. 283
Bowser, Inc. 272
Willis S. Martin Co.
Braxmar Co., Inc., C. G. 26
Brown & Blauvelt 283
Buck, Seifert & Jost 284
Buffalo Meter Co. 47
Melvin F. Hall Adv., Inc.
Buffalo Pipe & Foundry Corp. 257
Adam F. Eby, Adv.
Bulot, Inc., Francis H. 284
Burger Co., William E. 284
Burgess & Niple 284
Burke Co., J. E. 231
Fred J. Chlupp Assoc., Inc.
Burke, Inc., Ralph H. 284
Burns & McDonnell 284
Burr Chemical Co. 251
Sweet Adv. Agency
Burroughs Corp. 89
Campbell-Ewald Co.

Caisson Wells, Inc. 221
Carbolineum Wood Preserving Co. 239
Bert S. Gittins Adv.
Cast Iron Pipe Research Assn....62, 63
H. B. Humphrey, Alley & Richards, Inc.
Caterpillar Tractor Co. 6, 18, 294
N. W. Ayer & Son, Inc.
Cayuga Rock Salt Co., Inc. 266
Robert Eastman, Inc.
Centriline Corp. 44
Needham & Grohmann, Inc.
Champion Corp. 76
Critchfield & Co.
Chapman Valve Mfg. Co. 69
Sutherland-Abbott, Adv.
Chicago Bridge & Iron Co. 24
Russell T. Gray, Inc.
Chicago Pneumatic Tool Co. 240
G. M. Basford Co.
Circul-Air Corp. 276
Rolfe C. Spinning Inc.
City Tank Corp. 192
Cleminshaw Co., J. M. 239, 284
Climax Engine & Pump Mfg. Co. ... 255
Peterson Advertising Agency
Clow & Sons, James B 204
Henry M. Hempstead Co.
Cole & Son, Charles W. 284
Cole-Layer-Trumble Co. 284
Cole Mfg. Co., R. D. 98
Burton E. Wyatt & Co.
Colorado Fuel & Iron Corp 247
Doyle, Kitchen & McCormick, Inc.
Consoer, Townsend & Assoc. 284
Cooper-Bessemer Corp. 166
Griswold-Eshleman Co.
Cotton, Pierce, Streander, Inc. ... 285
Crose Mfg. Co., Inc., M. J 248
Paul Locke, Adv.
Crouse-Hinds Co 172
Barlow Adv. Agency, Inc.

Damon & Foster 285
Darley & Co., W. S. 211
Darling Valve & Mfg. Co. 73
Griswold-Eshleman Co.
De Laval Steam Turbine Co 64
Michel-Cather, Inc.
Delco-Remy Div., General Motors Corp. 78, 79
Campbell-Ewald Co.
De Leuw, Cather & Co. 285
Dempster Brothers, Inc. 228
Charles S. Kane Co.
Detectron Corp. 245
Harry G. Willis & Assoc.
Dolge Co., C. B. 26
Caples Co.
Dorr Co. 52, 53
Sutherland-Abbott, Adv.
Dresser Mfg. Div. 68
Fuller & Smith & Ross, Inc.
Drott Mfg. Co. 196, 197
Leo Burnett Co., Inc.
Dual Parking Meter Co. 182
Griswold-Eshleman Co.
Duncan Parking Meter Corp. ...16, 176
Perry Hutchinson Co.

Eastern Metal of Elmira, Inc. 248
Laux Advertising, Inc.
Eddy Valve Co. 65
Henry M. Hempstead
Edwards, Kelcey & Beck..... 285
Electrical Testing Laboratories, Inc. 285
Ellis & Ford Mfg. Co. 272
Dudgeon, Taylor & Bruske, Inc.
Em Ro Distributors, Inc. 249
L. H. Gross & Assoc.
Etnyre & Co., E. D. 101
Howard H. Monk & Assoc., Inc.
Evinrude Motors 236
Cramer-Krasselt Co.
Expanding Sewer Machine Co. 252

Fairbanks, Morse & Co. 55
Buchen Co.
Fairchild Aerial Surveys, Inc. 285
Federal Sign & Signal Corp. 250
Edgar Walter Fischer & Assoc.
Ferro Enameling Co. 256
Ralph Cahn, Advertising
Fisher Research Laboratory, Inc.... 38
Guy-Lee Organization, Adv.
Flexible Sales Corp. 82
Anderson-McConnell Adv. Agency
Flood & Co., Walter H. 285
Foote Co., Inc. 258
Russell T. Gray, Inc.
Ford, Bacon & Davis 285
Ford Meter Box Co. 229
Louis E. Wade, Inc.

Gamewell Co. 28
Sutherland-Abbott, Adv.
Gannett Fleming Corddry & Carpenter, Inc. 285
Gar Wood Industries 223
Andrews Agency, Inc.
Geerpres Wringer, Inc. 248
Denham & Co.
General American Transportation Corp. 87
Weiss & Geller, Inc.
General Electric Co. ..48, 49, 164, 165
G. M. Basford Co.
General Electric Co. 20, 21
Maron, Inc.
Geo-Research 286
Gerrard & Co., A. J. 81
Raymond C. Hudson & Assoc., Inc.
Gokey, John J. 286
Goldak Co. 45
Simons Co.
Golden-Anderson Valve Specialty Co. 195
Walker & Downing, Industrial Adv.
Gravely Tractors, Inc. 40
Albert D. Williams, Adv.
Graver Tank & Mfg. Co., Inc. 200
Buchen Co.
Green Co., Howard R. 286
Griffenhagen & Assoc. 286
Griffith, L. B. 286
Grote Mfg. Co. 76
Wilson Adv. Agency
Gunite Concrete & Construction Co. 286
Walter L. Johnson Assoc.

Hapman-Dutton Co. 286
Paxson Advertising, Inc.
Hardie Mfg. Co. 275
Beeson-Reichert Inc.
Harley-Davidson Motor Co. 96
Klau-Van Pietersom-Dunlap, Inc.
Harris-Barrier, Inc. 72
Harris, Inc., Frederic R. 286
Harris, Robert Bruce 286
Hawkins-Hawkins Co. 264
Hayward Co. 232
Rickard & Co., Inc.
Hersey Mfg. Co. 61
Hetherington & Berner Inc. 278
Caldwell, Larkin & Co., Inc.
Hoffco, Inc. 80
Ruben Adv. Agency
Holophane Co., Inc. 175
Wm. G. Seidenbaum & Co.
Homelite Corp. 162
Sutherland-Abbott, Adv.
Hough Co., Frank G. 94, 95
Ervin R. Abramson, Adv.
Hussey Mfg. Co., Inc. 209
Ray Mills Adv. Agency, Inc.
Hyatt, Chauncey A. 287
Hydrauger Corp., Ltd. 72
E. W. Shafer & Co.

International Business Machines Corp. 254
Cecil & Presbrey, Inc.
International Harvester Co.... 196, 197
Leo Burnett Co., Inc.
International Salt Co., Inc. 97
Scheideler, Beck & Werner, Inc.
Iowa Valve Co. 206
Henry M. Hempstead Co.

Irving Subway Grating Co. 274
Richmond Adv. Service Inc.

Jacobs & Co., J. L. 287
Jaeger Machine Co. 277
Mumm, Mullay & Nichols, Inc.
Johns-Manville 210
J. Walter Thompson Co.
Johnson, Inc., Edward E. 209
Johnson Steel & Wire Co. 207
John W. Odlin Co., Inc.
Joy Mfg. Co. 39
Walker & Downing, General Agency

Ka-Mo Tools, Inc. 260
Van Auken, Ragland & Stevens
Karpark Corp. 60
Smithson, Wyman & Withenbury, Inc.
Kennedy, Clyde C. 287
Klett Mfg. Coo 98
Koehring Co. 46, 93
Andrews Agency, Inc.
Kohler Co. 241
Roche, Williams & Cleary, Inc.
Koppers Co., Inc. 100
Batten, Barton, Durstine & Osborn, Inc.
Koven Steel Swimming Pools, Inc.. 282
Lucerna Co.
Kwik-Mix Co. 93
Andrews Agency, Inc.

Layne & Bowler, Inc. 51
Rosengarten & Steinke, Inc.
Leadite Co. 251
R. E. Lovekin Corp.
Lessman Mfg Co. 256
Graves & Associates
Lindsay Co., P. K. 264
Julian Brightman Co.
Line Material Co. 170
Erwin, Wasey & Co., Ltd.
Lock Joint Pipe Co. 198
Needham & Grohmann, Inc.
Lord & Burnham 237
Ernest Chabot Adv. Agency
Lowry, L. E. 287
Lube-Jack Co. 230
Lyle Sians, Inc. 271
Alfred Colle Co.

Magee-Hale Park-O-Meter Co. ... 99
McCormick-Armstrong Co.
M & H Valve & Fittings Co. 193
Silver & Douce Co., Inc.
Mathieson Chemical Corp. 12
Doyle, Kitchen & McCormick, Inc.
McWane Cast Iron Pipe Co. 215
Silver & Douce Co., Inc.
Metcalf & Eddy 287
Metcalf Bros. & Co. 90
Robert B. Grady Co.
Mi-Co Meters 180
Jaap-Orr Co.
Micro-Balancing Inc. 259
Duncan Brooks Inc.
Mid-Western Industries, Inc. 231
Associated Adv. Agency, Inc.
Minnesota Mining & Mfg. Co. 14
Batton, Barton, Durstine & Osborn, Inc.
Miro-Flex Co. 80
Associated Adv. Agency, Inc.
Mitts & Merrill 268
Price, Hedrick & Tanner, Inc.
Morris Machine Works 233
Barlow Adv. Agency, Inc.
Morse Boulger Destructor Co. 186
Sanger-Funnell, Inc.
Muddeman & Assoc., John M. 287
Mueller Co. 59
Ross Advertising
Municipal Street Sign Co., Inc. ... 57
Martin L. Smith & Co., Inc.
Murdock Mfg. & Supply Co. 264
L. F. McCarthy & Co.

National Clay Pipe Mfrs., Inc. ... 85
Norman Malone Associates, Inc.
National Supply Co. 83
Ketchum, MacLeod & Grove, Inc.
National Tube Div. 167
Batten, Barton, Durstine & Osborn, Inc.
National Water Main Cleaning Co. 219
Bauer Advertising, Inc.
Neenah Foundry Co. 60
Brady Co.
Neptune Meter Co. 102
W. L. Towne Adv.
Netco Div. 74
Stanley Associates, Adv.
New Hermes, Inc. 275
Lester Harrison, Inc.
Nichols Eng. & Research Corp.... 22
Stuart Co.
Nichols Wire & Aluminum Co. 98
L. W. Ramsey Adv. Agency
Nite Bright Sign Co. 230
Nordberg Mfg. Co. 64
Russell T. Gray, Inc.
Northern Gravel Co. 74
Sweet Adv. Agency
Norwich Wire Works, Inc. 278
Nussbaumer-Clarke & Velzy, Inc. .. 287
Nutting Co., H. C. 287

Oliver Corp. 50
Buchen Co.
Onan & Sons, Inc., D. W. 279
Graves & Associates

Pacific States Cast Iron Pipe Co. 215
Silver & Douce Co., Inc.
Pak-Mor Mfg. Co. 232
Pitluk Adv. Co.
Palmer & Baker, Inc. 288
Parking Corp. of America 276
Fred H. Ebersold, Inc.
Parsons Co. 92
Andrews Agency, Inc.
Parsons, Brinckerhoff, Hall and Macdonald 288
Patrolite Co. 269
Tri-State Adv. Co., Inc.
Permutit Co. 218
Cunningham & Walsh, Inc.
Pfaff & Kendall 184
Duncan Brooks, Inc.
Pitometer Associates, Inc. 288
Pittsburgh-Des Moines Steel Co. .. 216
Walker & Downing, Industrial Adv.
Pittsburgh Testing Laboratory.... 288
Portland Cement Association..... 238
Roche, Williams & Cleary, Inc.
Potts Assoc., Clyde 288
Premax Products Div. 259
Norton Adv. Service
Price Brothers Co., Inc. 32
Yeck & Yeck
Prismo Safety Corp. 178
Michener & O'Connor, Inc.

Radar Engineering Co. 288
Radiator Specialty Co. 274
Bennett-Evans Co.
Ranney Method Water Supplies, Inc. 74
Cye Landy Adv. Agency, Inc.
Raynor Aerial Surveys 288
Recorda: Corp. 262
J. Walter Thompson Co.
Rensselaer Valve Co. 66
W. L. Towne Adv.
Revere Engineering Co. 288
Rhodes, Inc., M. H. 295
Julian Gross Adv. Agency, Inc.
Robert & Co. Assoc. 288
Roberts Filter Mfg. Co. 194
Renner Advertising
Rockwell Mfg. Co. 190
Marsteller, Gebhardt & Reed, Inc.
Rodding Cleaning Machines, Inc... 272
Rosco Mfg. Co. 270
Foulke Agency
Ross Valve Mfg. Co., Inc. 217
Russell & Axon 289
Rust-Oleum Corp. 75
O'Grady-Andersen Gray, Inc.
Ryerson & Son, Inc., Joseph T. ... 36
Calkins & Holden, Carlock, McClinton & Smith, Inc.

Schield Bantam Co. 242
Ambro Adv. Agency
Irby Seay Co. 287
Raymond Powell Agency
Seelye Stevenson Value & Knecht. 289
Servis Equipment Co. 265
Tayor-Norsworthy, Inc.
Servis & Van Doren 289
Sidu Co. 255
Simplex Valve & Meter Co. 253
Cunningham & Walsh, Inc.
Skinner Co., M. B. 8
Jones & Taylor & Assoc.
Smith Mfg. Co., A P 208
Louis Kniep, Jr., & Assoc.
Smith & Co, Gordon 270
Zimmer-McClaskey
Smith, Inc., Harold T. 289
Smith Co., S. Morgan 202
W. M. Hart Co.
Smith & Gillespie 289
Snyder, McLellan & Watson 289
Solar-Sturges Mfg. Div. 260
Albert Frank-Guenther Law, Inc.
Solvay Process Div., Allied Chemical & Dye Corp. 91, 222
Atherton & Currier, Inc.
Sparling Meter Co. 207
Steinman, D. B. 290
Stellwagen, Robert H. 290
Sterling Co. 290
Stewart Iron Works Co., Inc. 72
Jaap-Orr Co.
Stewart, Inc., W. H. 213
Stilson & Assoc, Ltd., Alden E. 290
Subox, Inc. 267
Shivell-Hall Co. Inc.
Sweet Co., H. C. 82
Tech Adgency, Inc.

Taller & Cooper, Inc. 243
Harold Marshall Adv. Co., Inc.
Tarrant Mfg. Co. 213
Tennessee Corp. 67
Crawford & Porter, Inc.
Texas Co. 2
Thomas Drain Service 44
Jessop Adv. Co.
Thompson Electric Co. 263
Penn & Hamaker, Inc.
Thread-Ezy Mfg. Co. 256
Jepson-Murray Adv.
Todd Shipyards Corp. 76
Wendell P. Colton Co.
Toledo Testing Laboratory 290
Tractomotive Corp. 30
Bert S. Gittins Adv.
Traverse City Iron Works..... 269
Tropical Paint & Oil Co. 26
Fred M. Randall Co.
Turbo Jet Mfg. Co. 82
Guenther, Brown & Berne, Inc.

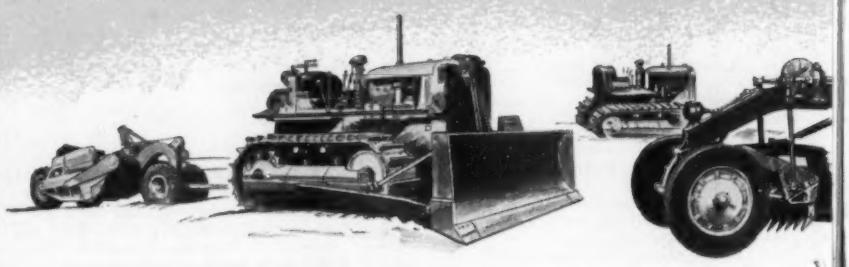
Underwood Corp. 56
Marschalk & Pratt Co., Inc.
Union Metal Mfg. Co. 174
Griswold-Eshleman Co.
United Metal Box Co., Inc. 232
Pace Adv. Agency, Inc.
U. S. Pipe & Foundry Co. 41
H. B. Humphrey, Alley & Richards, Inc.
U S. Steel Subsidiary 167
Batten, Barton, Durstine & Osborn, Inc.
Universal Concrete Pipe Co., Inc. 277
Byer & Bowman Adv. Agency

Wachs Co., E. H. 273
George W. Hughes Co.
Wainwright & Ramsey, Inc. 290
Wald Industries, Inc. 179
Michener & O'Connor, Inc.
Wallace & Tiernan 296
Branstater Associates, Inc.
Watkins, J. Stephen 291
Weil Pump Co. 207
Jack Bernhard, Advertising
Weil Machinery & Supply Co., Inc. 230
Rowland Broiles Co.
Wenzlick & Co., Roy 291
Weston, Eckenfelder & Hood, Inc. 291
Wheeler Reflector Co. 168
Ingalls-Miniter Co.
White Mfg. Co. 80
Juhl Adv. Agency
Wight & Co. 291
Wild Surveying Instrument Supply Co, H. 269
Richmond Adv. Service, Inc.
Wilkins & Assoc., E. T. 291
Williams Gauge Co 212
Waker & Downing, Industrial Adv.
Williams Inspection Co., A. W. ... 291
Wood Co., R D 58
Gray & Rogers, Adv.
Wood, Dolson Co., Inc. 291
Worthington Corp. 77
James Thomas Chirurg Co.
Worthington-Gamon Meter Div., Worthington Corp. 10

ANNOUNCING A

$10,000 GUARANTEE ON USED EQUIPMENT!

Never before a guarantee like this! Only your CATERPILLAR DEALER offers a "BONDED BUY" on used Caterpillar-built equipment backed by a bond of $10,000.



DON'T GUESS OR GAMBLE ON USED EQUIPMENT

You KNOW what you're getting at your CATERPILLAR DEALER

Your Caterpillar Dealer now offers you a "BONDED BUY" on used Caterpillar-built equipment backed by a bond of $10,000, issued by The Travelers Indemnity Company. He gives you this protection when you purchase a "BONDED BUY" machine.

This is the *first* time in the heavy-duty machinery field that such an offer has ever been made!

You are also offered two other classes of used equipment buys—"Certified Buy" and "Buy and Try." These cover used units of *any* make.

What does this mean to you? *It takes the guess and gamble out of buying used equipment.* You know what you're getting. Your assurance is in writing. What's more, *no matter what your needs, cost-wise or work-wise,* you have a *choice* to meet them.

Only your *Caterpillar Dealer* offers you this across-the-board selection. The best source of new machines, he's also your best source of used machines. Whether you're in the market for one, a few or many, he's the man to see for your *best* buy. See him today for complete details on guaranteed used machines!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

Your Caterpillar Dealer offers you three clear-cut classes of used equipment. He backs each one in writing. You buy with confidence, sure that the equipment is honestly described. See him for the best values on the market!

(1) "BONDED BUY" Only the best in used Caterpillar-built equipment. Each "BONDED BUY" machine is backed by a Dealer's Guarantee Bond equal to the purchase price of the machine up to a maximum of $10,000. This provides a guarantee for thirty days against unsatisfactory performance due to defective parts. If a part should prove defective within the guarantee period under the normal conditions of your job and with proper maintenance, your dealer will put your machine back into operating condition *with no charge to you for parts and labor* up to the amount of the bond. The Dealer's Guarantee Bond is backed by The Travelers Indemnity Company. Your Caterpillar Dealer gives you this protection with your purchase of a "BONDED BUY" machine. Look for the "BONDED BUY" symbol—it's your assurance of the best in used equipment.

(2) "CERTIFIED BUY" Next best buy in used equipment! "Certified Buy" covers machines of any make in good condition. Your performance guarantee is in writing backed by your Caterpillar Dealer.

(3) "BUY AND TRY" Bargains in used machines of any make. Buy and try them for a period mutually agreed upon by you and your Caterpillar Dealer. Each "Buy and Try" machine carries his written "money-back" agreement.

"BONDED BUY" assurance effective in the United States and Canada

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

BEST BUYS IN NEW AND USED EQUIPMENT

Copr. 1954, C. T. Co.

MARK-TIME manual parking meters
FIRST CHOICE in St. Louis

St. Louis re-orders Mark-Time Manual Parking Meters 3 TIMES!

Comprehensive comparative tests of the Mark-Time Manual Parking Meter with all other makes, and careful checking of the maintenance and revenue records of other cities led the traffic officials of St. Louis to choose Mark-Time Parking Meters.

The original order was for 5,000 meters. Because of their record of unfailing dependability and superior performance under all weather conditions, as well as their maintenance ease and economy, the city of St. Louis re-ordered 3 times. St. Louis has now purchased a total of 10,000 Mark-Time Manual Parking Meters.

And so it goes in city after city throughout the nation . . . whenever parking meters are scientifically compared for tangible, provable performance, simplicity of operation, and economical easy maintenance . . . Mark-Time Manual Parking Meters are the Number One choice.

Manufactured and sold in Canada by SPERRY GYROSCOPE, OTTAWA LTD.

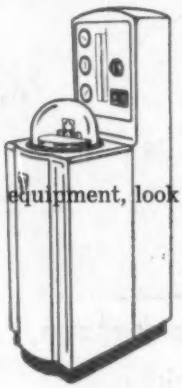
M. H. RHODES, INC. HARTFORD, CONN.

MARK-TIME

NOW DEPENDABLE CHLORINATION plus

Since 1913, Wallace & Tiernan has consistently offered the best in chlorination and chlorination equipment. Now . . . the new A-701, first of the W & T "700" series of chlorinators, and the most up-to-date chlorinator available today, offers these PLUS VALUES to assure safe and dependable chlorination:

- *Feed ranges up to 100 to 1 without replacing meters.*
- *Maximum corrosion resistance without sacrifice of structural design.*
- *Linear scale reading of chlorine flow rate.*
- *May be operated by manual control, or automatically by electric, hydraulic, air pressure or air vacuum control.*
- *Feed rates up to 1000 pounds per 24 hours.*



For the best in equipment, look for the PLUS VALUES that add up to Dependable Chlorination.

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, N. J.

S-90